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Basic Concepts in Pivot Tables

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Introduction

Information has become a key factor for both business organizations and for society in general. Business organizations are today undergoing a process of digital transformation; the new Industry 4.0 is an unstoppable force. Managers require efficient information systems (IS) that allow them to manage of a vast volume of information to reduce uncertainty in decision-making complex environments. IS have become essential for the competitiveness and even for the survival of companies. Tools known as business intelligence (BI) become particularly relevant, since they allow companies to link their strategies with the creation of knowledge from the information analysis.

Microsoft Excel is one of the most popular spreadsheet tools among the wide range of software in the market. Its most recent versions, which are included in the Office 365 and Office 2019 packages, provide new features and expand its functionality as a BI or reporting tool, thereby increasing its potential as an information system for any type of user.

Pivot tables are a powerful Excel tool that allow the user to manage and analyze a large amount of information, filtering it, summarizing and grouping it, and even creating dynamic reports, graphs and indicators, covering the main functions of all BI. This tool is currently extensively used in all organizations, and particularly in small and medium-sized companies with limited resources to invest in specific business intelligence tools.

As teachers of subjects related to information and management systems at the Universitat Jaume I who are aware of the growing use of these functions for organizations, especially for SMEs that account for the majority of companies in our region, and of the demand for a professional profile that combines knowledge and specific skills of each field of knowledge with skills of a technological nature, we felt it would be useful to write a manual that provides students with the basic aspects of using dynamic tables. Students will have access to the more advanced options of Power Pivot based on the relationship between different data sources.

One of the main advantages of these dynamic tables is precisely their ability to analyze data from different perspectives, and their ability to respond to different situations or needs. The practical cases will give allow students a better understanding of the potential of dynamic tables in the management of any type of organization.

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Chapter 1: How to create dynamic tables

1.1. DATA IN EXCEL IN A STANDARD TABLE FOR THE PREPARATION OF A DYNAMIC TABLE

Prior to the analysis of the dynamic tables, the data are presented without any treatment, organized in quadrants in Excel. This shows us the data set that we will subsequently use to prepare the dynamic tables.

Table 1.1. presents the data for an example that we will work on, which in this case are the kilograms that a corporation handles and recycles of different products (plastic, paper and cardboard, glass, metals and textiles) in its various facilities or dumps located in different areas.

Table 1.1. Baseline data to analyze the processed kilos of different products from a landfill in the first quarter

Quarter	Month	Month_ name	Landfill	Product	Kilograms
1st Quarter	1	January	Landfill 1	Plastic	600
1st Quarter	1	January	Landfill 1	Paper and cardboard	300
1st Quarter	1	January	Landfill 1	Glass	900
1st Quarter	1	January	Landfill 1	Metal	400
1st Quarter	1	January	Landfill 1	Textile	300
1st Quarter	1	January	Landfill 2	Plastic	700

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Quarter	Month	Month_ name	Landfill	Product	Kilograms
1st Quarter	1	January	Landfill 2	Paper and cardboard	800
1st Quarter	1	January	Landfill 2	Glass	500
1st Quarter	1	January	Landfill 2	Metal	700
1st Quarter	1	January	Landfill 2	Textile	500
1st Quarter	1	January	Landfill 3	Plastic	500
1st Quarter	1	January	Landfill 3	Paper and cardboard	1000
1st Quarter	1	January	Landfill 3	Glass	700
1st Quarter	1	January	Landfill 3	Metal	600
1st Quarter	1	January	Landfill 3	Textile	200
1st Quarter	1	January	Landfill 4	Plastic	200
1st Quarter	1	January	Landfill 4	Paper and cardboard	1500
1st Quarter	1	January	Landfill 4	Glass	800
1st Quarter	1	January	Landfill 4	Metal	900
1st Quarter	1	January	Landfill 4	Textile	600
1st Quarter	1	January	Landfill 5	Plastic	1000
1st Quarter	1	January	Landfill 5	Paper and cardboard	700
1st Quarter	1	January	Landfill 5	Glass	1300
1st Quarter	1	January	Landfill 5	Metal	800
1st Quarter	1	January	Landfill 5	Textile	500

The details of the contents of this table for the first two trimesters, which will enable subsequent analysis by the students, are provided in Annex I.

Notes:

When creating dynamic tables, there must never be columns in the source table without data in the first row or heading, or any blank columns interspersed in it.

As we can see, there are different types of variables, also called fields, which are described in Table 1.2 below.

Table 1.2. Variable types and descriptions

Variable types	Description
Temporary	- Trimester: time dimension. - Month: time dimension.
Qualitative	- Dump: useful data for classifying treatment facilities. - Product: data for the classification of the different collected waste.
Quantitative	- Units: numerical data that represents the available kilos of each type of waste.

The following sections describe the process followed in the creation and design of the dynamic tables. These tables will enable a more attractive and efficient analysis of the information, grouped by product types, dumps, months and trimesters. Using this type of information, decisions can be made in the knowledge of which dump recycles the most kilograms, what type of product is the most recycled in each dump, which time period reports the highest volume of recycled product, etc.

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Chapter 2: Functioning and contents of dynamic tables

2.1. HOW TO CREATE A PIVOT TABLE ACCORDING TO THE DATA SOURCE

After our table presented in Annex I has been entered in Excel, the Insert tab must be selected from the operations ribbon, and its first option, Pivot Table, as shown in Figure 2.1 below.

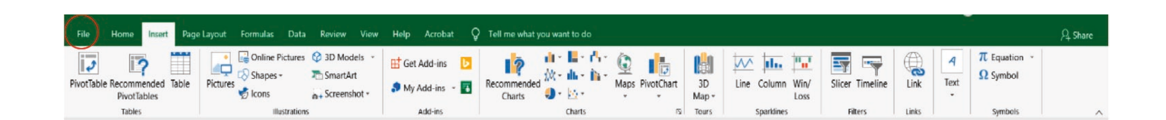


Figure 2.1. PivotTable option in the Insert tab

There are two options for entering pivot tables. The first is to perform a prior selection of the data in the original table (see Annex I) to be reported using the pivot table, and then select the Pivot Table option. The second consists of first selecting the Pivot Table option, and in the "Create Dynamic Table" pop-up window that appears, select the range or table of data to report in the analysis, as shown in Figure 2.2 below.

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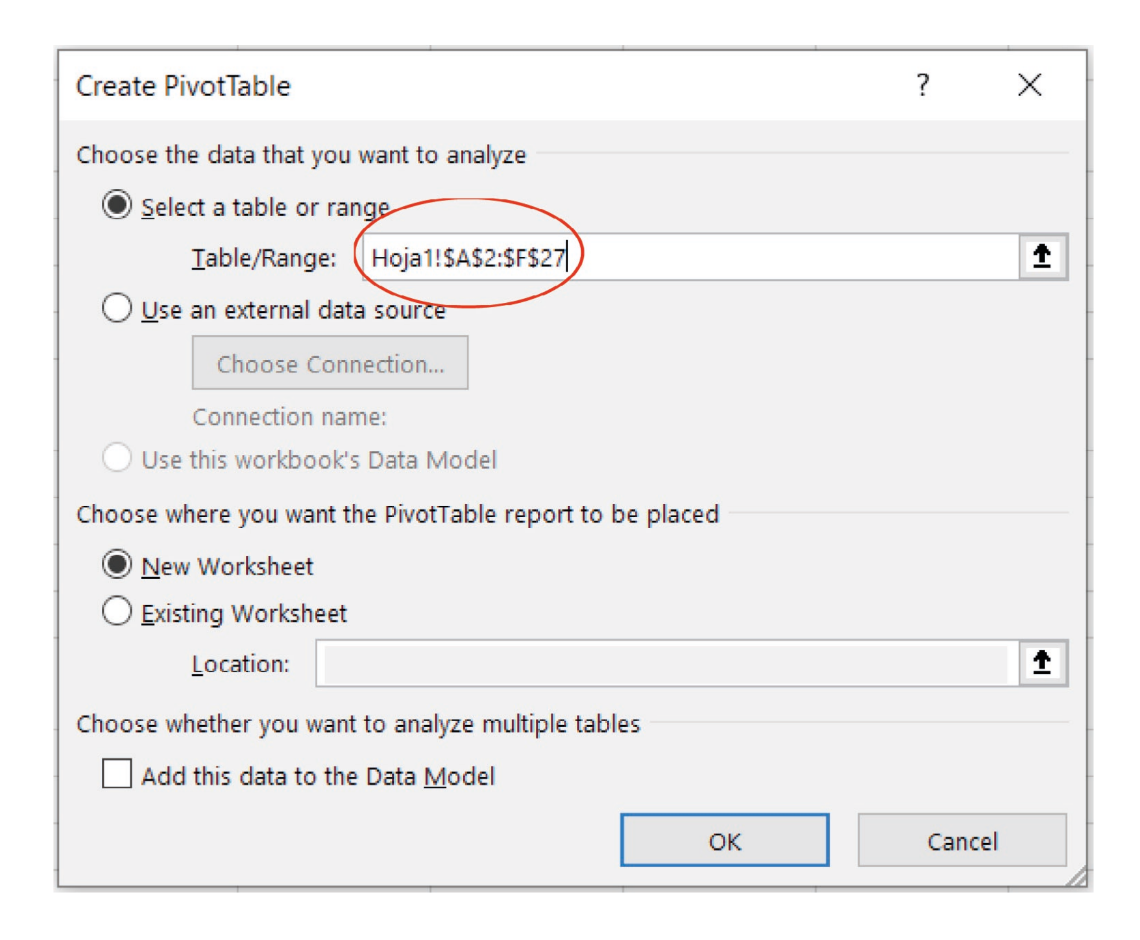


Figure 2.2. Selecting data in the Create PivotTable option

There is another option for selecting data from external sources such as other Excel files, databases and even text files (see Figure 2.3).

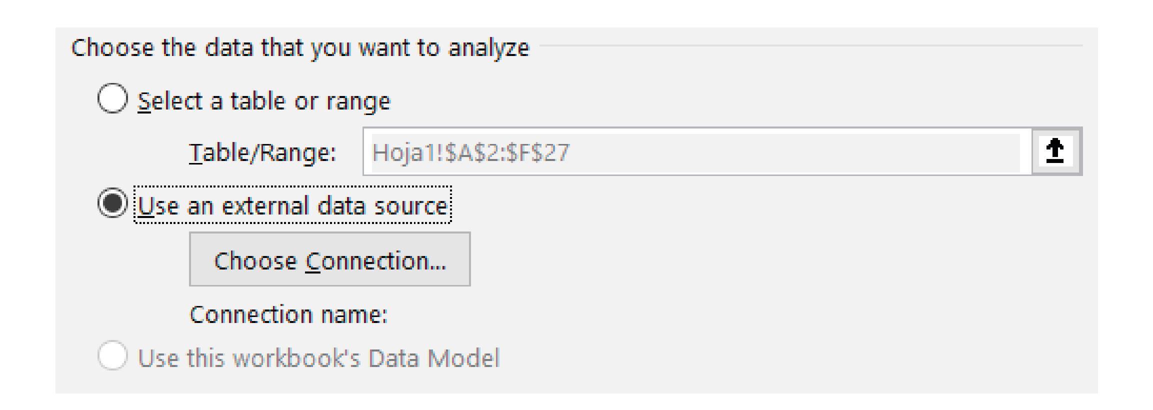


Figure 2.3. Use of an external data source

For an existing spreadsheet, the *Location* must be specified exactly, as shown in Figure 2.4 below. Of the two options available, it is advisable to create a new spreadsheet for the final location of the table in order to avoid possible confusion in the data analyzed. Once the data set has been selected in the previous table, select the location where you want to place the pivot table - in either a *New spreadsheet* or in the *Existing spreadsheet* (see Figure 2.4).

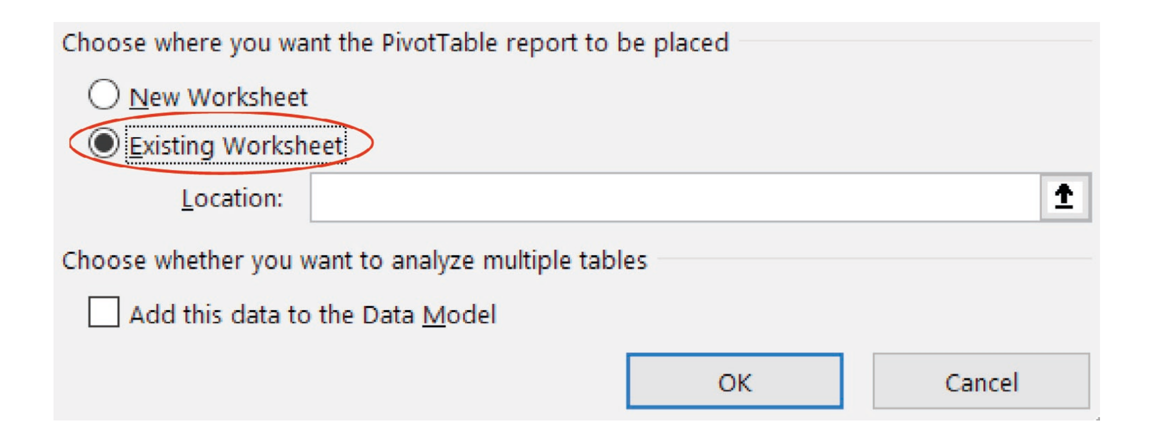


Figure 2.4. Choosing where to place the PivotTable

As explained later, more than one pivot table can be used as a data source, which presumes that there are previous relationships between them.

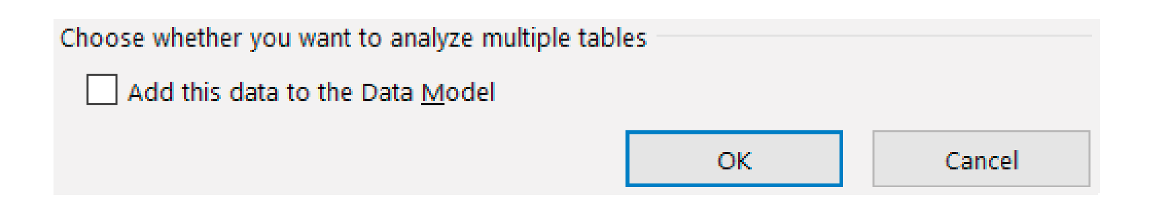


Figure 2.5. Adding more than one PivotTable as a data source

After selecting the option, click on the *OK* button. Depending on the location of the dynamic table, some pop-up windows will be displayed like those shown in Figure 2.6 below.

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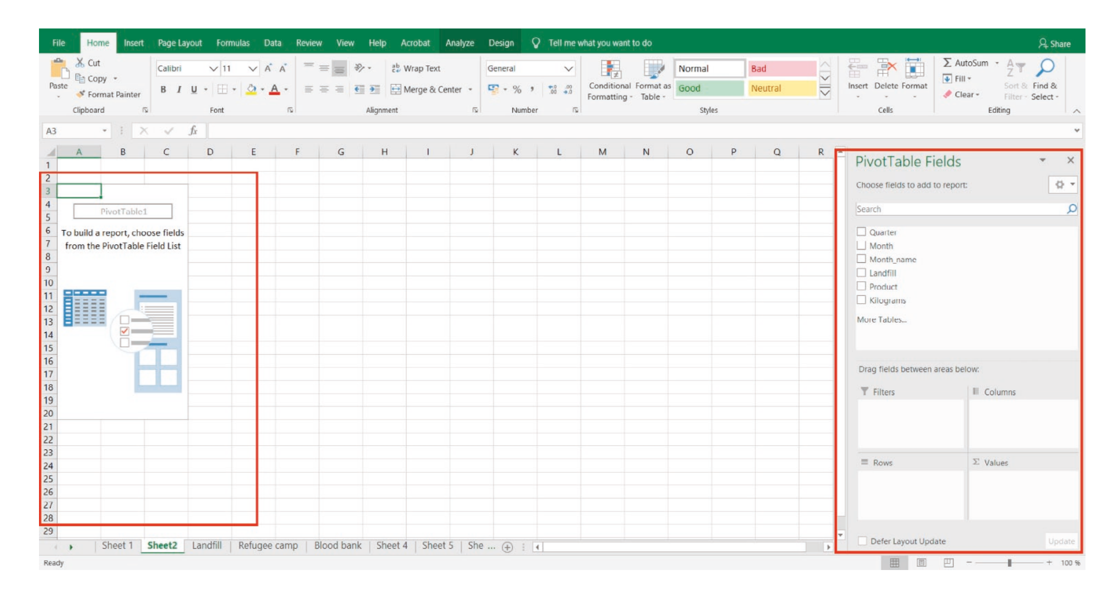


Figure 2.6. PivotTable fields

At this point, the pivot table is created with the data selected from the original table (see annex 1). With this pivot table activated, the pop-up window can be accessed (it appears on the right side of the spreadsheet), from where each of the fields for building the dynamic table can be selected, and its distribution chosen from between *Columns* and *Rows* (see Figure 2.7). *Report Filters* can also be applied, and various options selected for calculating the *Values*, which permit options to be reported including the sum (which will be used in the following examples), the average and the variance. These options will be described in greater detail in section 2.2.

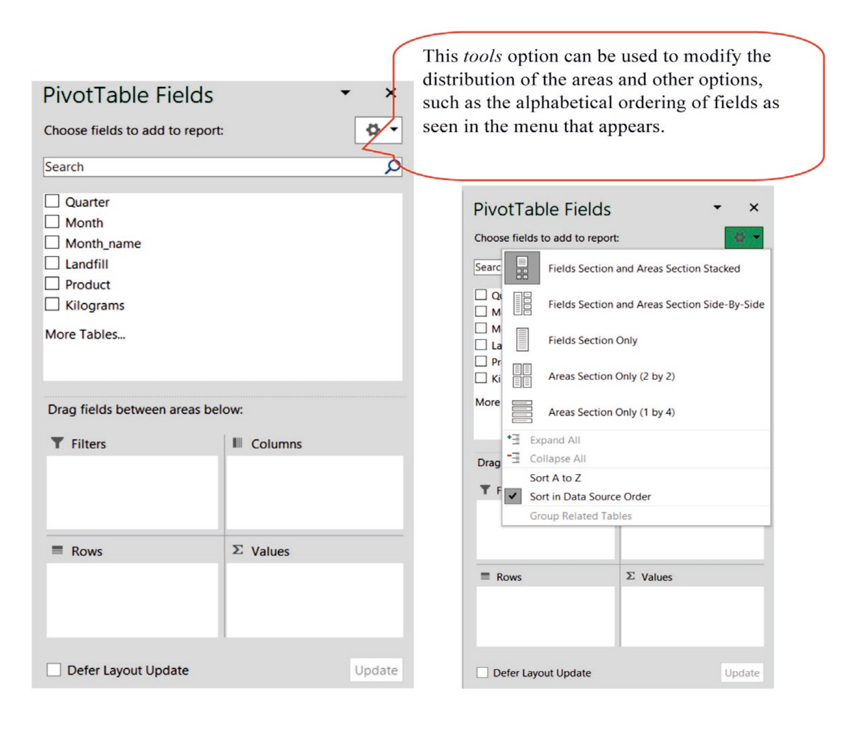


Figure 2.7. Options in the PivotTable Fields

The list of fields in the pivot table includes all the fields that can be used as column labels, row labels, to apply a filter (showing the data based on the selected value), or for a summary function or operation (sum, average, standard deviation, etc.). These fields can be entered in each area by selecting and dragging them.

The order of the existing fields in columns or rows can be changed by moving the previously selected fields with the mouse, or with the options shown in the drop-down in each field, as shown in Figure 2.8. The final *Field Configuration* option will be explained in greater detail in section 2.2.

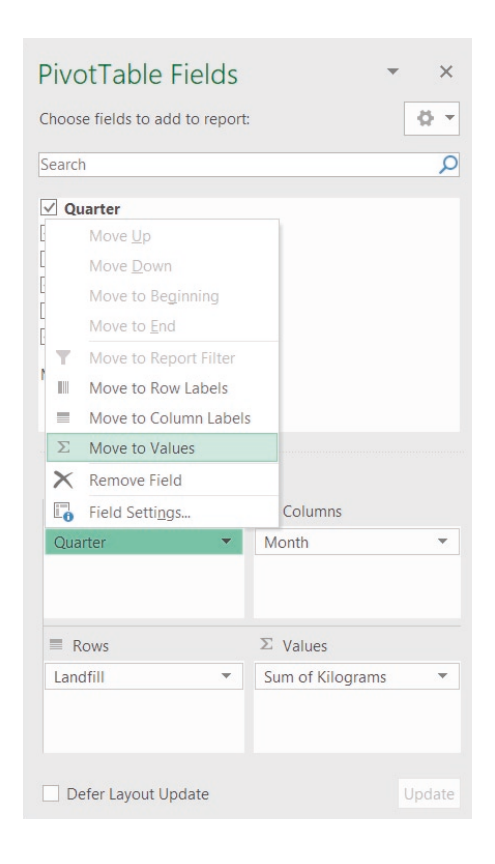
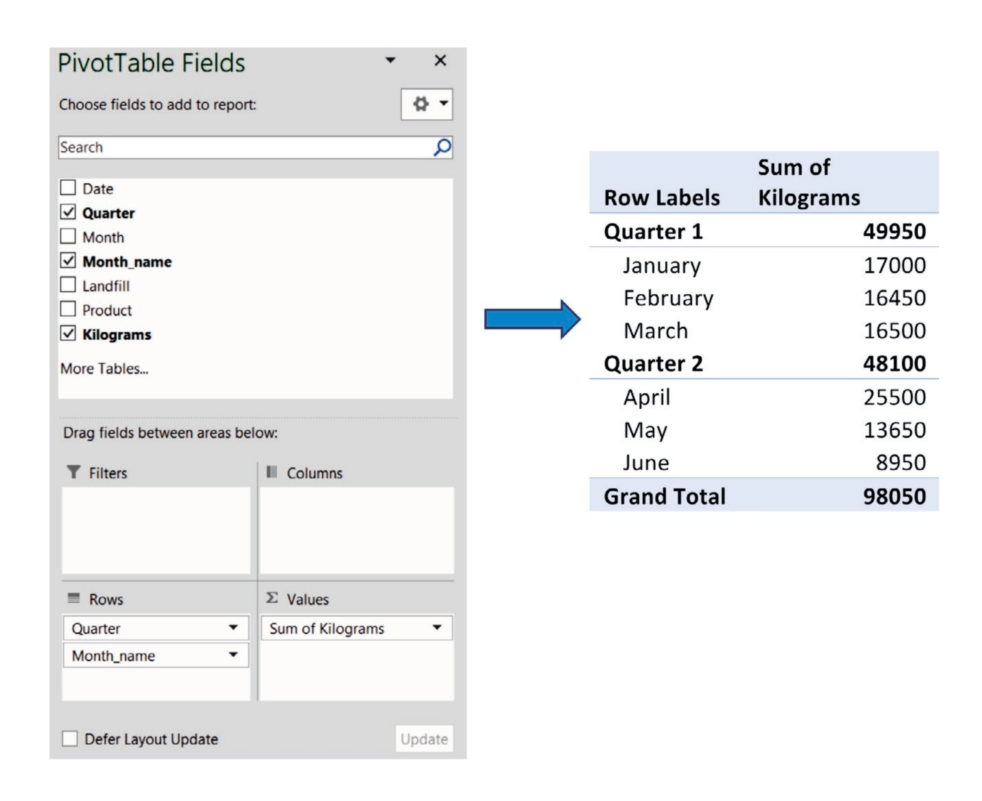


Figure 2.8. PivotTable Fields operating options

Using the previous options, different tables can be created for the aggregated analysis of the data. Figure 2.9 shows the total kilos recycled per quarter and month, which provides better oversight.

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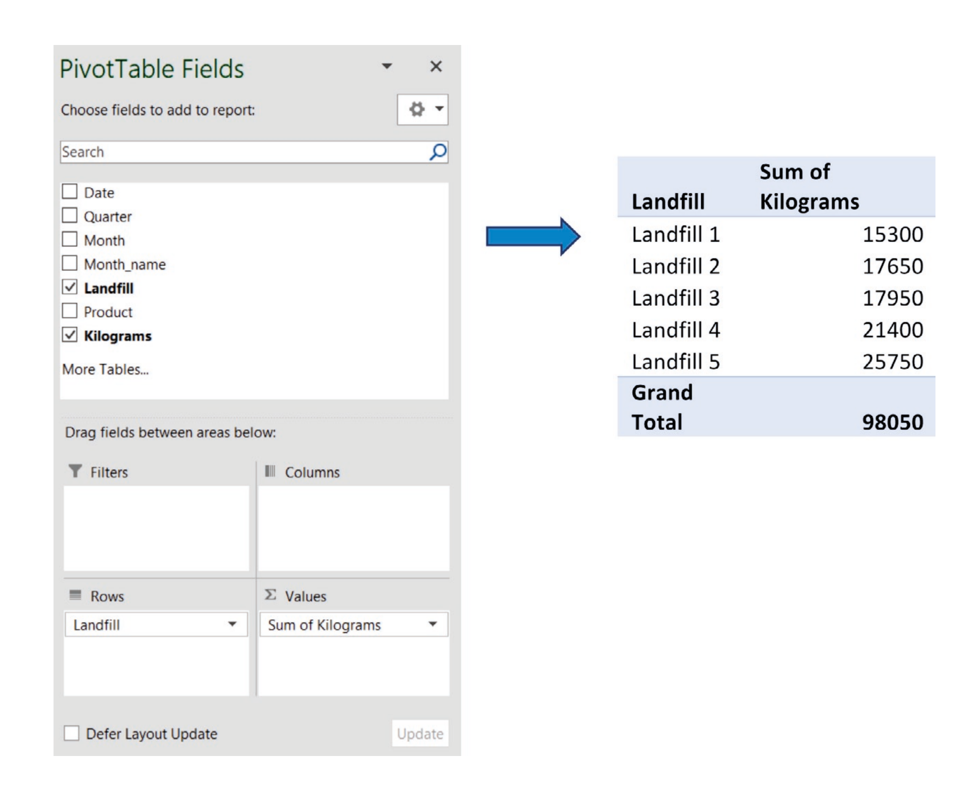
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Row Labels	Sum of Kilograms
Quarter 1	**49950**
January	17000
February	16450
March	16500
Quarter 2	**48100**
April	25500
May	13650
June	8950
Grand Total	**98050**

Figure 2.9. Recycling of products in kilos in the first and second quarter

Figure 2.10. Below shows the total kilos added for each landfill.



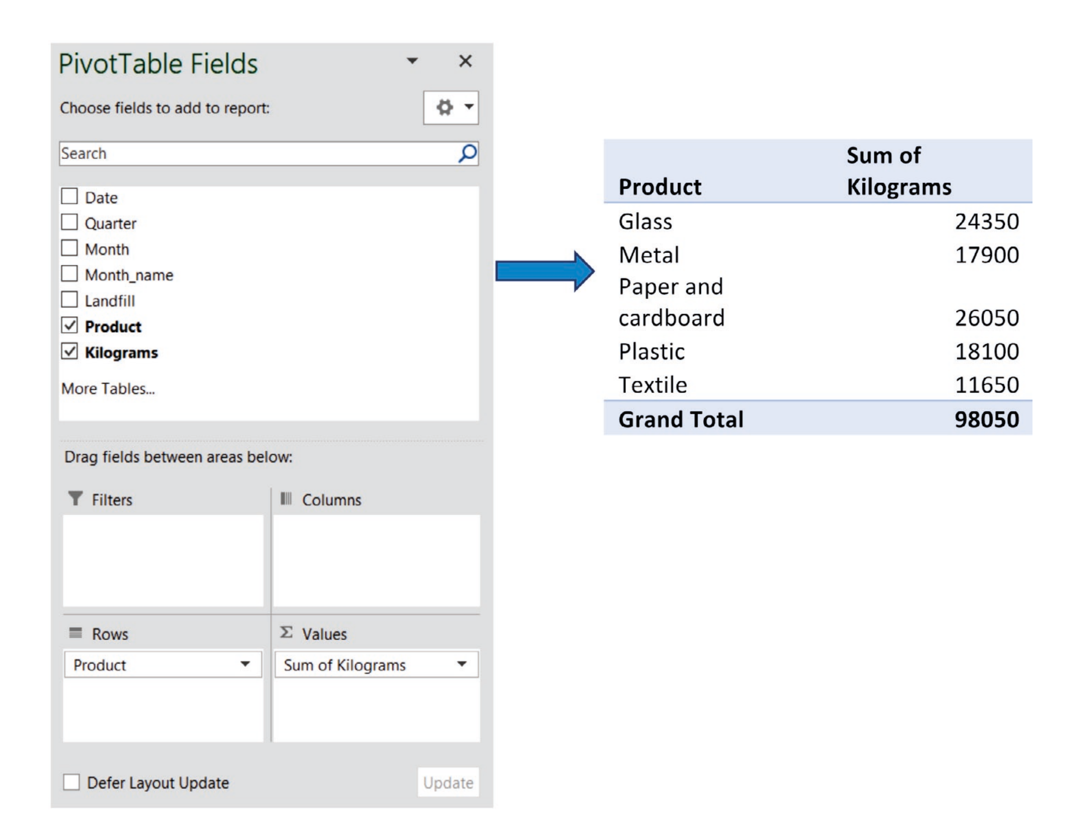
Landfill	Sum of Kilograms
Landfill 1	15300
Landfill 2	17650
Landfill 3	17950
Landfill 4	21400
Landfill 5	25750
Grand Total	**98050**

Figure 2.10. Recycling of products in kilos by landfill

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Figure 2.11 shows the kilos recycled by type of product.



Product	Sum of Kilograms
Glass	24350
Metal	17900
Paper and cardboard	26050
Plastic	18100
Textile	11650
Grand Total	**98050**

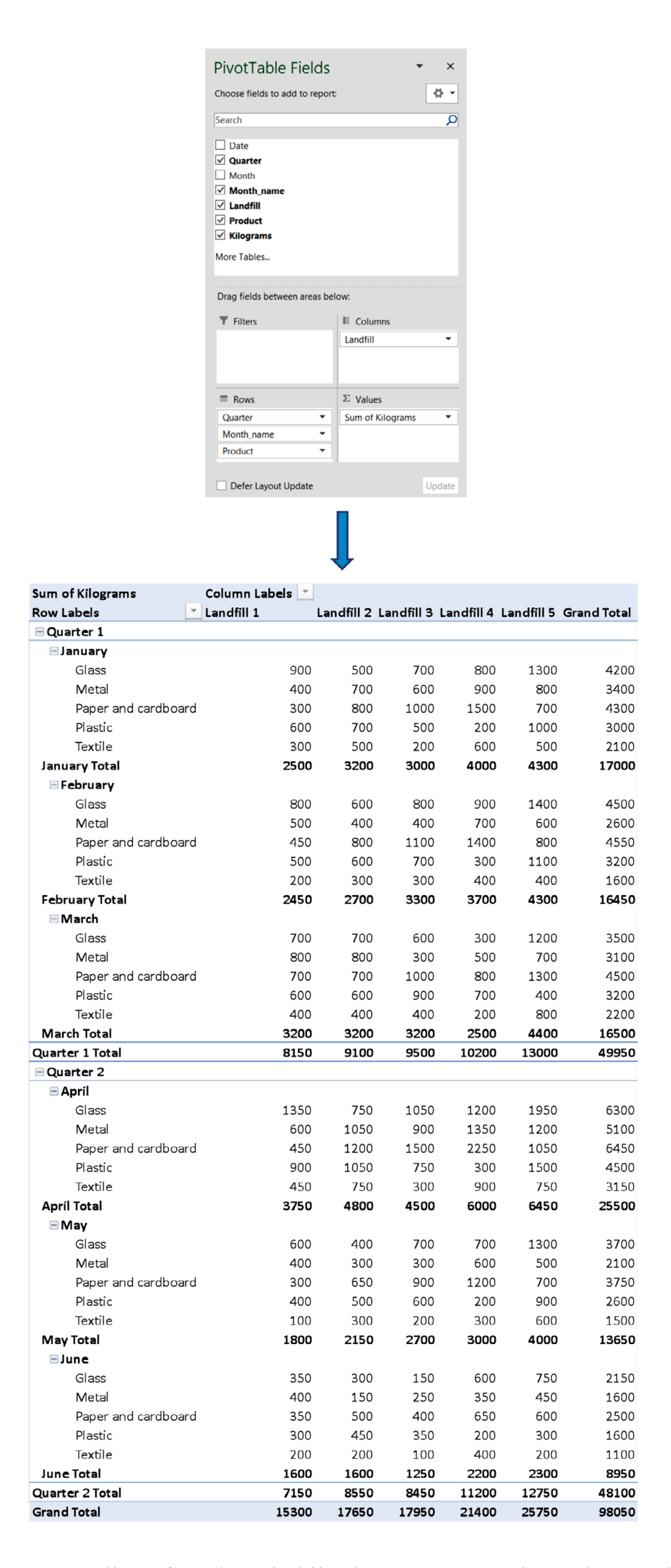
Figure 2.11. Recycling of products in kilos by type of product

According to the above data, a little more waste was recycled in the first quarter, the dump with the highest volume of recycling is number 5, and the most recycled product is cardboard.

If we want to do a more detailed analysis, e.g. checking the amount recycled per month of each type of product; the amount recycled per quarter of each product in each landfill, or the type of product that is recycled most each month, a greater level of detail is needed in the data, as shown in Figure 2.12 below.

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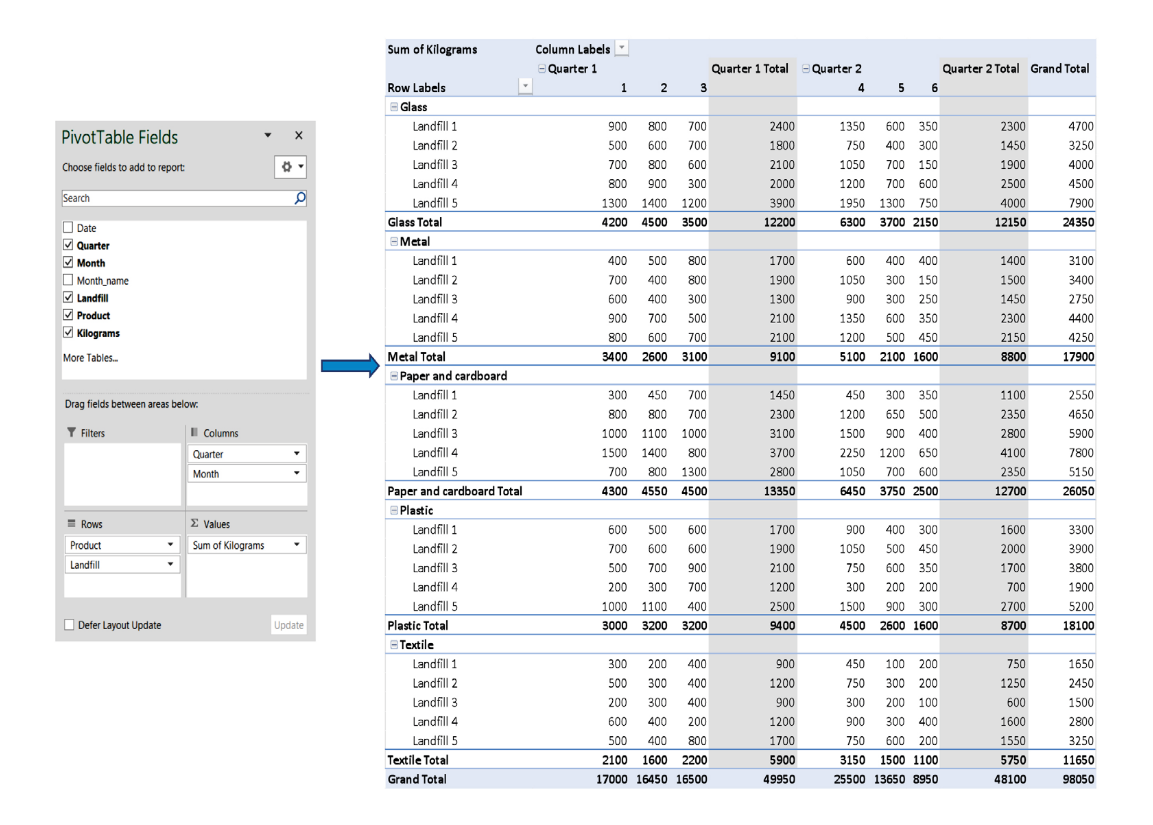
Sum of Kilograms	Column Labels					
Row Labels	Landfill 1	Landfill 2	Landfill 3	Landfill 4	Landfill 5	Grand Total
Quarter 1						
January						
Glass	900	500	700	800	1300	4200
Metal	400	700	600	900	800	3400
Paper and cardboard	300	800	1000	1500	700	4300
Plastic	600	700	500	200	1000	3000
Textile	300	500	200	600	500	2100
January Total	**2500**	**3200**	**3000**	**4000**	**4300**	**17000**
February						
Glass	800	600	800	900	1400	4500
Metal	500	400	400	700	600	2600
Paper and cardboard	450	800	1100	1400	800	4550
Plastic	500	600	700	300	1100	3200
Textile	200	300	300	400	400	1600
February Total	**2450**	**2700**	**3300**	**3700**	**4300**	**16450**
March						
Glass	700	700	600	300	1200	3500
Metal	800	800	300	500	700	3100
Paper and cardboard	700	700	1000	800	1300	4500
Plastic	600	600	900	700	400	3200
Textile	400	400	400	200	800	2200
March Total	**3200**	**3200**	**3200**	**2500**	**4400**	**16500**
Quarter 1 Total	**8150**	**9100**	**9500**	**10200**	**13000**	**49950**
Quarter 2						
April						
Glass	1350	750	1050	1200	1950	6300
Metal	600	1050	900	1350	1200	5100
Paper and cardboard	450	1200	1500	2250	1050	6450
Plastic	900	1050	750	300	1500	4500
Textile	450	750	300	900	750	3150
April Total	**3750**	**4800**	**4500**	**6000**	**6450**	**25500**
May						
Glass	600	400	700	700	1300	3700
Metal	400	300	300	600	500	2100
Paper and cardboard	300	650	900	1200	700	3750
Plastic	400	500	600	200	900	2600
Textile	100	300	200	300	600	1500
May Total	**1800**	**2150**	**2700**	**3000**	**4000**	**13650**
June						
Glass	350	300	150	600	750	2150
Metal	400	150	250	350	450	1600
Paper and cardboard	350	500	400	650	600	2500
Plastic	300	450	350	200	300	1600
Textile	200	200	100	400	200	1100
June Total	**1600**	**1600**	**1250**	**2200**	**2300**	**8950**
Quarter 2 Total	**7150**	**8550**	**8450**	**11200**	**12750**	**48100**
Grand Total	**15300**	**17650**	**17950**	**21400**	**25750**	**98050**

Figure 2.12. Recycling of products in kilos by quarter, month, product, and landfill

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The way the data is presented in the following dynamic table is due to the product field being adopted as the main axis of analysis, and it is subsequently completed by the other fields mentioned above (see Figure 2.13).



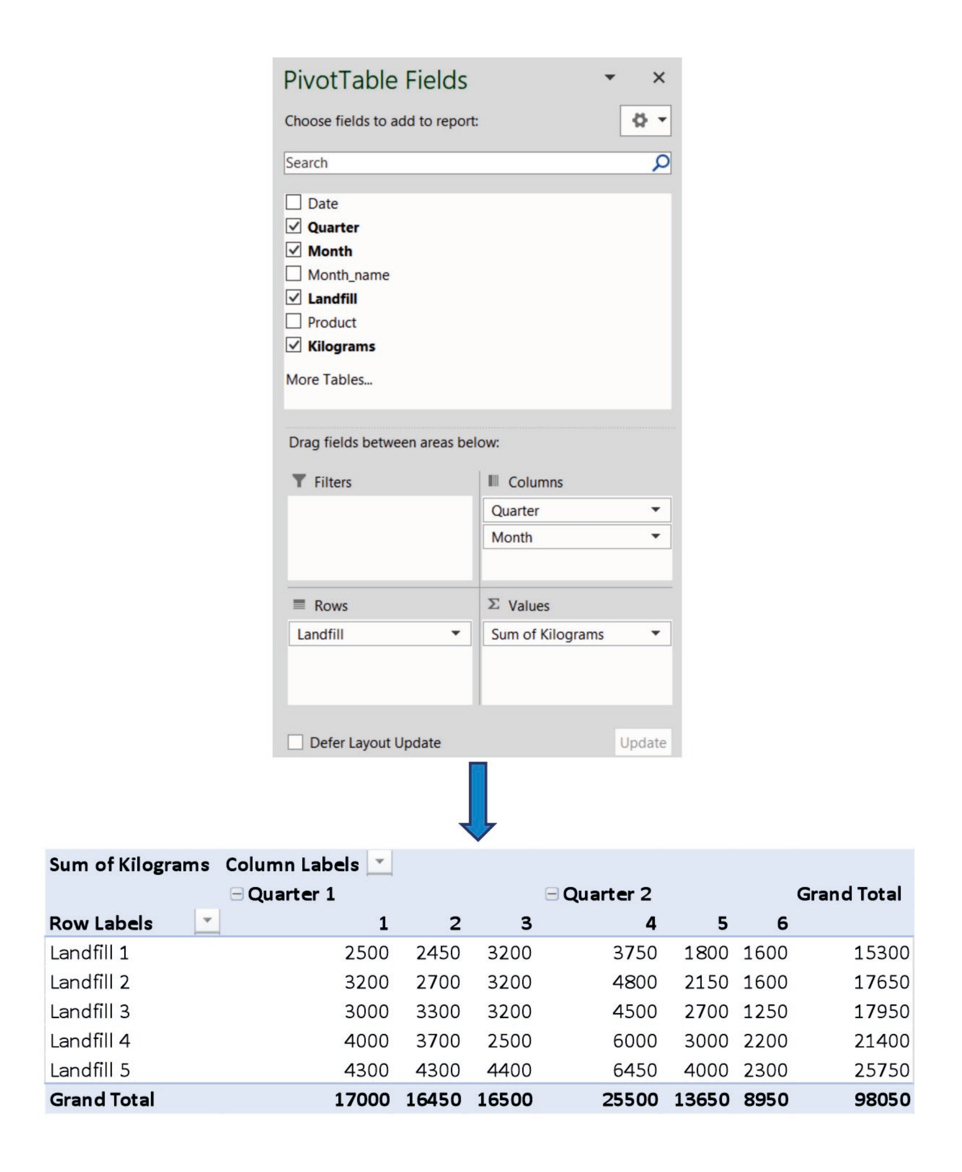
Sum of Kilograms	Column Labels								
	Quarter 1			Quarter 1 Total	Quarter 2			Quarter 2 Total	Grand Total
Row Labels	1	2	3		4	5	6		
Glass									
Landfill 1	900	800	700	2400	1350	600	350	2300	4700
Landfill 2	500	600	700	1800	750	400	300	1450	3250
Landfill 3	700	800	600	2100	1050	700	150	1900	4000
Landfill 4	800	900	300	2000	1200	700	600	2500	4500
Landfill 5	1300	1400	1200	3900	1950	1300	750	4000	7900
Glass Total	**4200**	**4500**	**3500**	**12200**	**6300**	**3700**	**2150**	**12150**	**24350**
Metal									
Landfill 1	400	500	800	1700	600	400	400	1400	3100
Landfill 2	700	400	800	1900	1050	300	150	1500	3400
Landfill 3	600	400	300	1300	900	300	250	1450	2750
Landfill 4	900	700	500	2100	1350	600	350	2300	4400
Landfill 5	800	600	700	2100	1200	500	450	2150	4250
Metal Total	**3400**	**2600**	**3100**	**9100**	**5100**	**2100**	**1600**	**8800**	**17900**
Paper and cardboard									
Landfill 1	300	450	700	1450	450	300	350	1100	2550
Landfill 2	800	800	700	2300	1200	650	500	2350	4650
Landfill 3	1000	1100	1000	3100	1500	900	400	2800	5900
Landfill 4	1500	1400	800	3700	2250	1200	650	4100	7800
Landfill 5	700	800	1300	2800	1050	700	600	2350	5150
Paper and cardboard Total	**4300**	**4550**	**4500**	**13350**	**6450**	**3750**	**2500**	**12700**	**26050**
Plastic									
Landfill 1	600	500	600	1700	900	400	300	1600	3300
Landfill 2	700	600	600	1900	1050	500	450	2000	3900
Landfill 3	500	700	900	2100	750	600	350	1700	3800
Landfill 4	200	300	700	1200	300	200	200	700	1900
Landfill 5	1000	1100	400	2500	1500	900	300	2700	5200
Plastic Total	**3000**	**3200**	**3200**	**9400**	**4500**	**2600**	**1600**	**8700**	**18100**
Textile									
Landfill 1	300	200	400	900	450	100	200	750	1650
Landfill 2	500	300	400	1200	750	300	200	1250	2450
Landfill 3	200	300	400	900	300	200	100	600	1500
Landfill 4	600	400	200	1200	900	300	400	1600	2800
Landfill 5	500	400	800	1700	750	600	200	1550	3250
Textile Total	**2100**	**1600**	**2200**	**5900**	**3150**	**1500**	**1100**	**5750**	**11650**
Grand Total	**17000**	**16450**	**16500**	**49950**	**25500**	**13650**	**8950**	**48100**	**98050**

Figure 2.13. Recycling of products in kilos by quarter, month, product, and landfill

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Finally, the following Pivot Table uses the type of landfill as the main criterion for listing the information (see Figure 2.14).



Sum of Kilograms	Column Labels						
	Quarter 1			Quarter 2			Grand Total
Row Labels	1	2	3	4	5	6	
Landfill 1	2500	2450	3200	3750	1800	1600	15300
Landfill 2	3200	2700	3200	4800	2150	1600	17650
Landfill 3	3000	3300	3200	4500	2700	1250	17950
Landfill 4	4000	3700	2500	6000	3000	2200	21400
Landfill 5	4300	4300	4400	6450	4000	2300	25750
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Figure 2.14. Information on recycled kilos, using the landfill of origin as the main criterion

2.2 VALUE FIELD SETTINGS (Σ)

In the Values area in the Pivot Table Fields box, you can select the type of operation to be carried out with the field values, left clicking on the area itself; a new window with all these possibilities will open up (see Figure 2.15).

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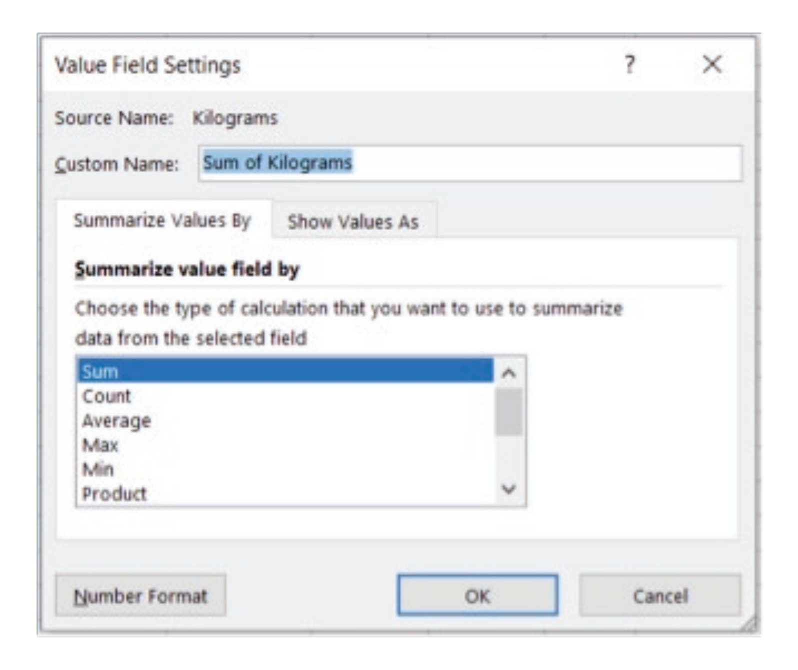


Figure 2.15. Value Field Settings

The summary of options that appear for the value field includes:

- *Sum:* calculates the sum of the values, which is the default function to use for numeric values.
- *Count*: counts the number of non-numeric repeating values. The Count summary function works in the same way as the Count worksheet function. This is the default for non-numeric values.
- *Average*: calculates the average of the selected values.
- *Maximization*: shows the maximum value.
- *Minimization*: shows the minimum value.
- *Product*: calculates the product of values.
- *Count numbers*: Count the number of values that are numbers. The summary function count numbers works in the same way as the worksheet function *Count*.
- *Standard deviation*: calculates the standard deviation of a population, where the sample is a subset of the entire population.
- *Typical deviation*: calculates the typical deviation of a population, where the population is all the values to be summarized.
- *Variance*: calculates the variance of a population, where the sample is a subset of the entire population.
- *Variance of a population*: calculates the variance of a population, where the population is all the values to be summarized.

Another option that is allowed from this window is the *Configuration of the field value*; the name of a field in the pivot table can be changed using the *Customized name* option, although these cannot be repeated (see Figure 2.16).

The *Show values* tab indicates how the data can be presented in percentages of the columns or rows, or related to another field (see Figure 2.16).

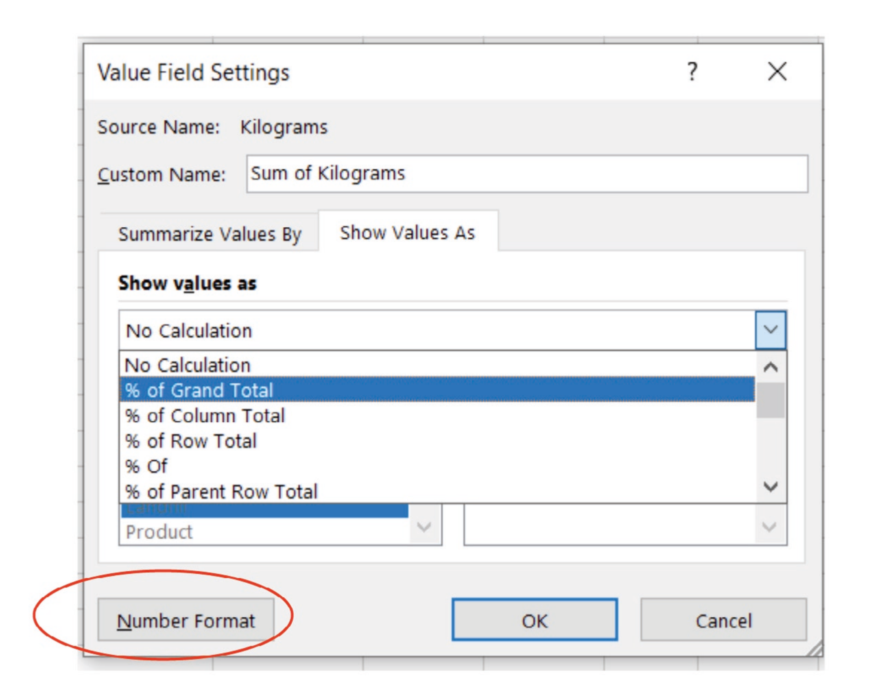


Figure 2.16. *Value Field options to be showed*

The options that can be chosen from the *Show values* drop-down menu are shown in Tables 2.1-2.9 below.

Table 2.1. % of the general total

Sum of Kilograms	**Month**						
Landfill	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Landfill 1	2.55%	2.50%	3.26%	3.82%	1.84%	1.63%	15.60%
Landfill 2	3.26%	2.75%	3.26%	4.90%	2.19%	1.63%	18.00%
Landfill 3	3.06%	3.37%	3.26%	4.59%	2.75%	1.27%	18.31%
Landfill 4	4.08%	3.77%	2.55%	6.12%	3.06%	2.24%	21.83%
Landfill 5	4.39%	4.39%	4.49%	6.58%	4.08%	2.35%	26.26%
Grand Total	**17.34%**	**16.78%**	**16.83%**	**26.01%**	**13.92%**	**9.13%**	**100.00%**

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Table 2.2. % of the total number of columns

Sum of Kilograms	Month						
Landfill	1	2	3	4	5	6	Grand Total
Landfill 1	14.71%	14.89%	19.39%	14.71%	13.19%	17.88%	15.60%
Landfill 2	18.82%	16.41%	19.39%	18.82%	15.75%	17.88%	18.00%
Landfill 3	17.65%	20.06%	19.39%	17.65%	19.78%	13.97%	18.31%
Landfill 4	23.53%	22.49%	15.15%	23.53%	21.98%	24.58%	21.83%
Landfill 5	25.29%	26.14%	26.67%	25.29%	29.30%	25.70%	26.26%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 2.3. % of the total number of rows

Sum of Kilograms	Month						
Landfill	1	2	3	4	5	6	Grand Total
Landfill 1	16.34%	16.01%	20.92%	24.51%	11.76%	10.46%	100.00%
Landfill 2	18.13%	15.30%	18.13%	27.20%	12.18%	9.07%	100.00%
Landfill 3	16.71%	18.38%	17.83%	25.07%	15.04%	6.96%	100.00%
Landfill 4	18.69%	17.29%	11.68%	28.04%	14.02%	10.28%	100.00%
Landfill 5	16.70%	16.70%	17.09%	25.05%	15.53%	8.93%	100.00%
Grand Total	**17.34%**	**16.78%**	**16.83%**	**26.01%**	**13.92%**	**9.13%**	**100.00%**

Table 2.4. % of previous month value

Sum of Kilograms	Month						
Landfill	1	2	3	4	5	6	Grand Total
Landfill 1	100.00%	98.00%	130.61%	117.19%	48.00%	88.89%	
Landfill 2	100.00%	84.38%	118.52%	150.00%	44.79%	74.42%	
Landfill 3	100.00%	110.00%	96.97%	140.63%	60.00%	46.30%	
Landfill 4	100.00%	92.50%	67.57%	240.00%	50.00%	73.33%	
Landfill 5	100.00%	100.00%	102.33%	146.59%	62.02%	57.50%	
Grand Total	**100.00%**	**96.76%**	**100.30%**	**154.55%**	**53.53%**	**65.57%**	

Table 2.5. Total in landfill

Landfill	Sum of Kilograms	Sum of Kilograms2
Landfill 1	15300	15300
Landfill 2	17650	32950
Landfill 3	17950	50900
Landfill 4	21400	72300
Landfill 5	25750	98050
Grand Total	**98050**	

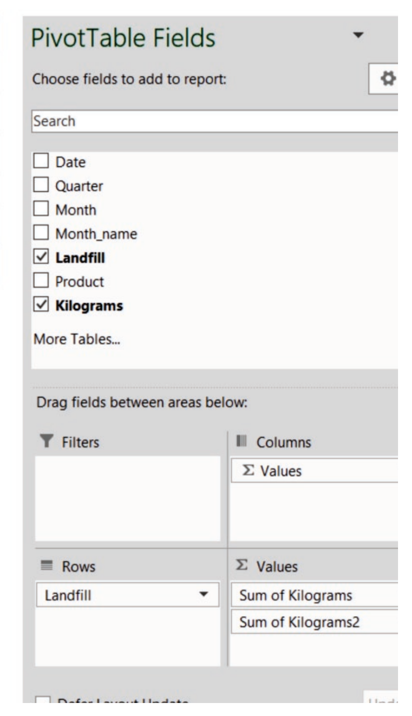


Table 2.6. % of total main rows

Sum of Kilograms	Month						
Landfill	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Landfill 1	14.71%	14.89%	19.39%	14.71%	13.19%	17.88%	15.60%
Landfill 2	18.82%	16.41%	19.39%	18.82%	15.75%	17.88%	18.00%
Landfill 3	17.65%	20.06%	19.39%	17.65%	19.78%	13.97%	18.31%
Landfill 4	23.53%	22.49%	15.15%	23.53%	21.98%	24.58%	21.83%
Landfill 5	25.29%	26.14%	26.67%	25.29%	29.30%	25.70%	26.26%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 2.7. % of total main columns

Sum of Kilograms	Month						
Landfill	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Landfill 1	16.34%	16.01%	20.92%	24.51%	11.76%	10.46%	100.00%
Landfill 2	18.13%	15.30%	18.13%	27.20%	12.18%	9.07%	100.00%
Landfill 3	16.71%	18.38%	17.83%	25.07%	15.04%	6.96%	100.00%
Landfill 4	18.69%	17.29%	11.68%	28.04%	14.02%	10.28%	100.00%
Landfill 5	16.70%	16.70%	17.09%	25.05%	15.53%	8.93%	100.00%
Grand Total	**17.34%**	**16.78%**	**16.83%**	**26.01%**	**13.92%**	**9.13%**	**100.00%**

Table 2.8. % of total in landfill

Landfill	Sum of Kilograms	Sum of Kilograms2
Landfill 1	15300	15.60%
Landfill 2	17650	33.61%
Landfill 3	17950	51.91%
Landfill 4	21400	73.74%
Landfill 5	25750	100.00%
Grand Total	**98050**	

Table 2.9. Sort from highest to lowest

Landfill	Sum of Kilograms	Sum of Kilograms2
Landfill 1	15300	5
Landfill 2	17650	4
Landfill 3	17950	3
Landfill 4	21400	2
Landfill 5	25750	1
Grand Total	**98050**	

In the *Value field* window, it is also possible to modify the way in which the numbers are formatted, such as the number of decimal places, the use of the thousand's separator, the format of negative numbers, etc. using the Number Format option (see Figure 2.17).

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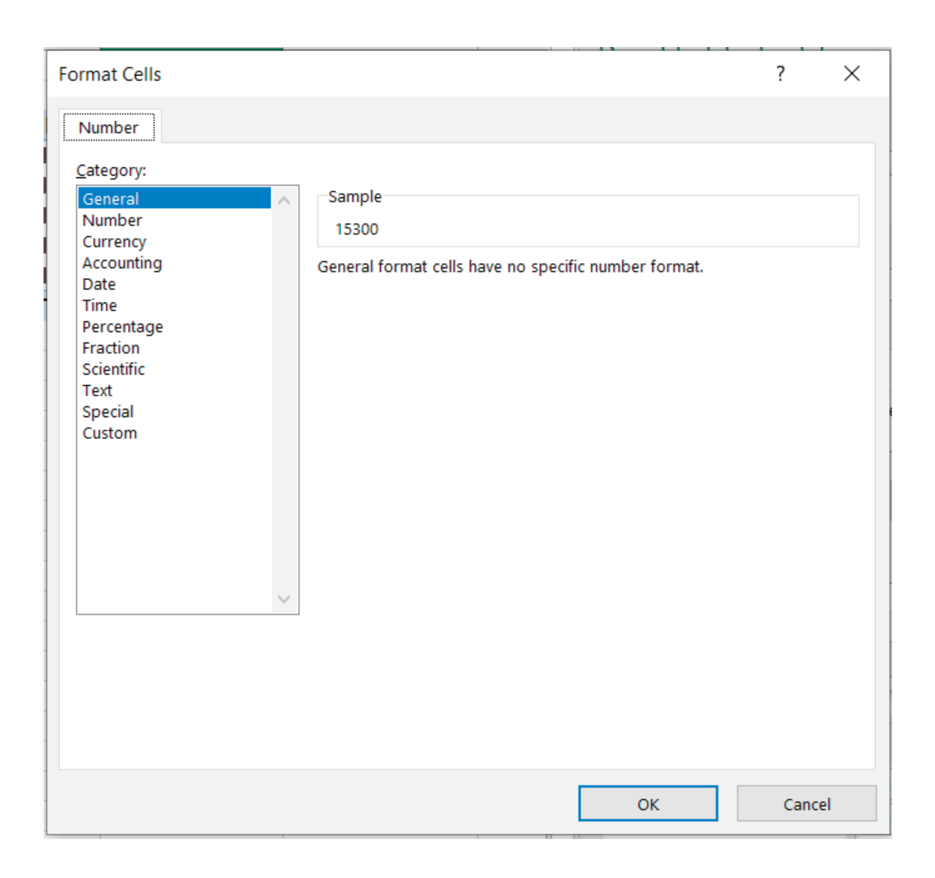


Figure 2.17. Format Cells

Finally, the configuration of a value field can also be changed; to do this, go to the field itself in the pivot table and select the *Configuration of the value field* option on the operations ribbon in the *Analyze* tab (see Figure 2.18).

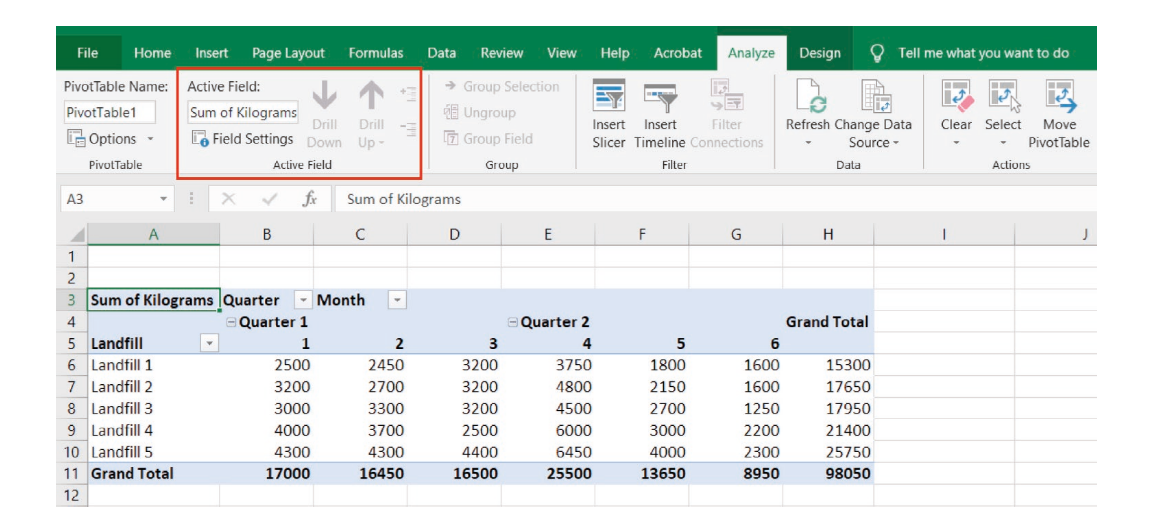


Figure 2.18. Value Field Settings in the Analyze tab

2.3. FIELD OPTIONS: ROWS, COLUMNS AND FILTERS

2.3.1. Configuration of a non-value field from an active field

The *Field Configuration option* can be accessed from the pivot table itself, by clicking the right mouse button on a data field (normally entered as row or column labels).

The options that appear under *Field Configuration*, which in this case are a non-value type, are shown in Figure 2.19 below.

Note:

The Custom Name can rename one field for another (as long as it is not repeated).

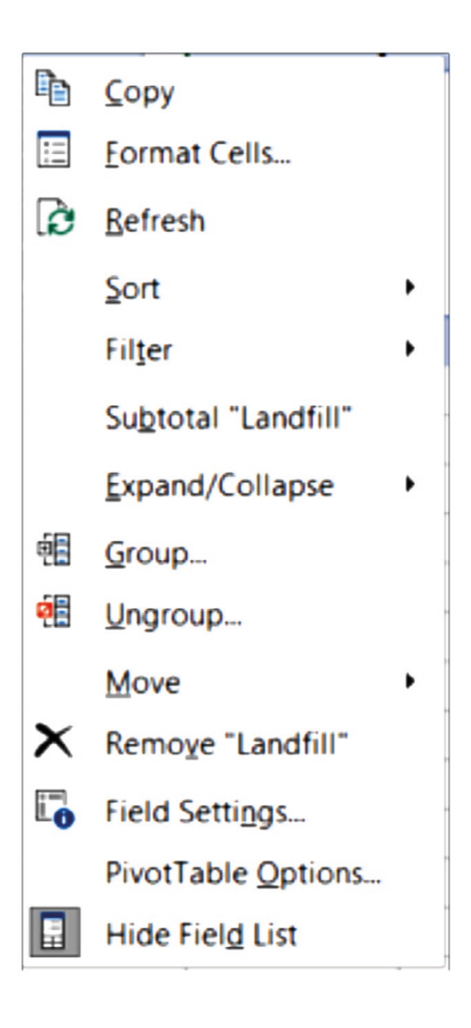


Figure 2.19. Non-value field setting

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From the Subtotals tab, the *Subtotals* option can be selected, with three possibilities:

- Automatic, showing the subtotal.
- None, showing the field without any subtotal.
- Customized, allowing a choice between different functions (see Figure 2.20).

Another option that appears on the *Subtotals and Filters tab is Filter*, which allows users to include new items in a Pivot Table report with a filter already applied. This option must be enabled if filters are used in this field.

This option must be checked so that the new fields that are added to any pivot table (previously updated from the *Analyze* tab) can be used as filters.

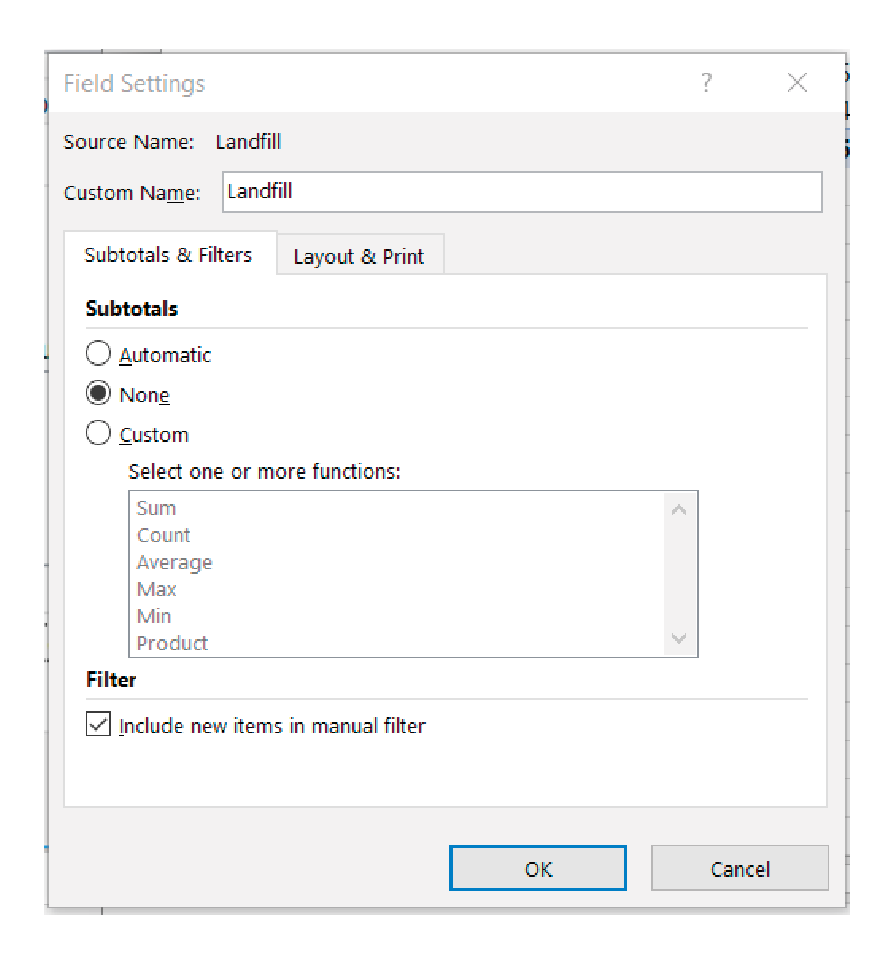


Figure 2.20. Field Settings, Subtotals and Filters tab

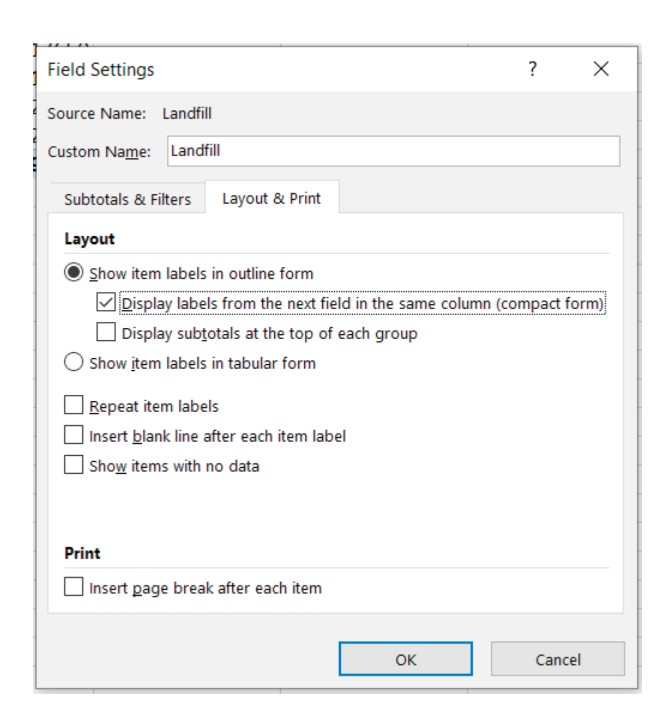
The following functions can be accessed by selecting the *Design and Printing* tab:

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Show item labels in schematic format

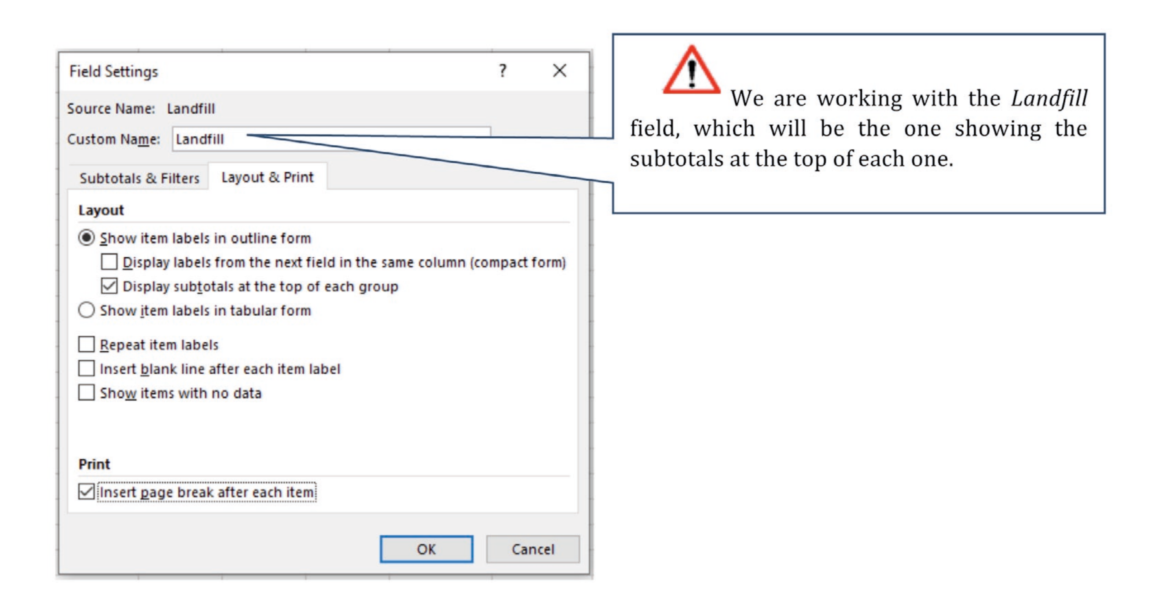
This option enables or disables the generic field label to be changed in the next field label in the same column (compact form) (see Figure 2.21).



Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Figure 2.21. Display labels from the next field in the same column and results from the selection

This option also includes the possibility of showing subtotals at the top of each group, by adding a new row.



Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Figure 2.22. Display subtotals at the top of each group and results from its selection

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Show item labels in tabular format

When this box is enabled, the elements of the fields are arranged in tabular form. This setting only applies to the fields located within the row labels area (see Figure 2.23).

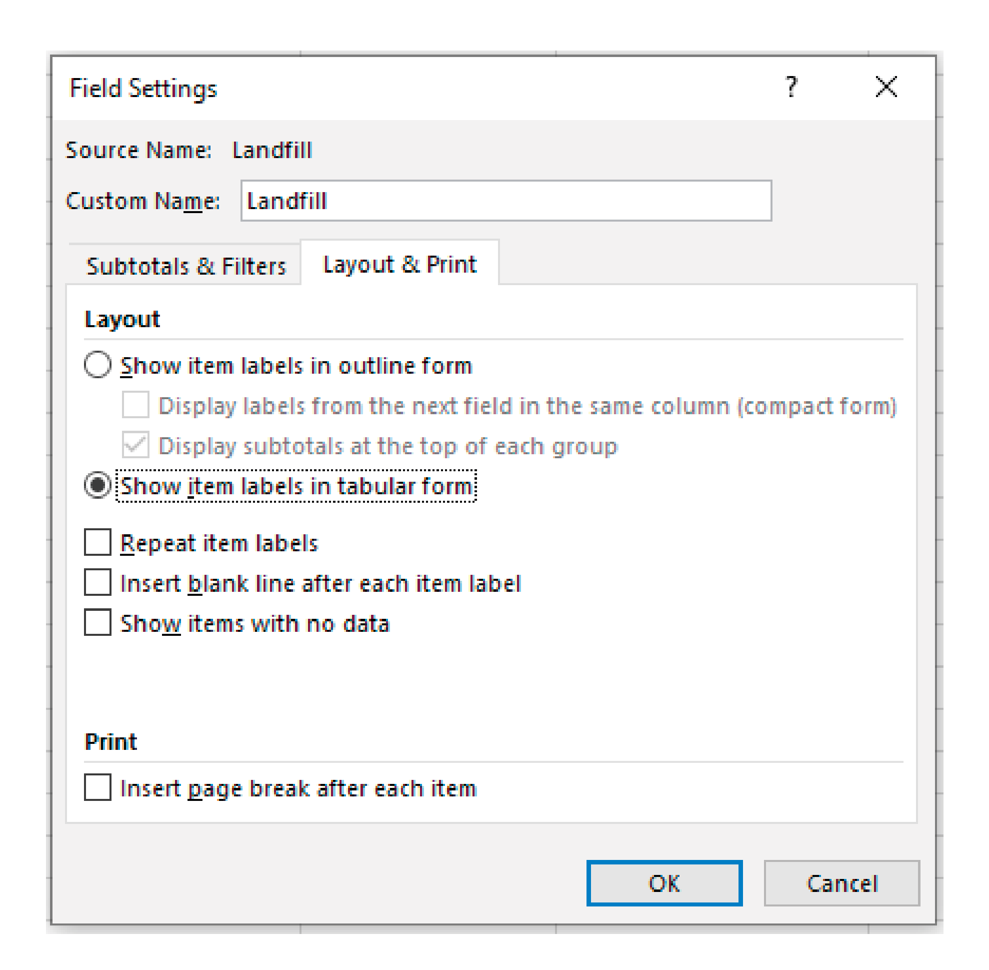


Figure 2.23. Show item labels in tabular forms

Other design and printing options:

Other actions in this tab are:

1. Repeat item labels.
2. Insert blank line after each item and increase the space, e.g. before the presentation of subtotals.
3. Show pivot table elements that do not contain data.
4. Insert a page break after each item when printing the pivot table.

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2.4. AGGREGATE OPTION

By selecting on the pivot table itself and clicking the right button of the mouse, the *Group* option appears (see Figure 2.24). In this case, we will work with the example of the pivot table that accompanies the Figure below.

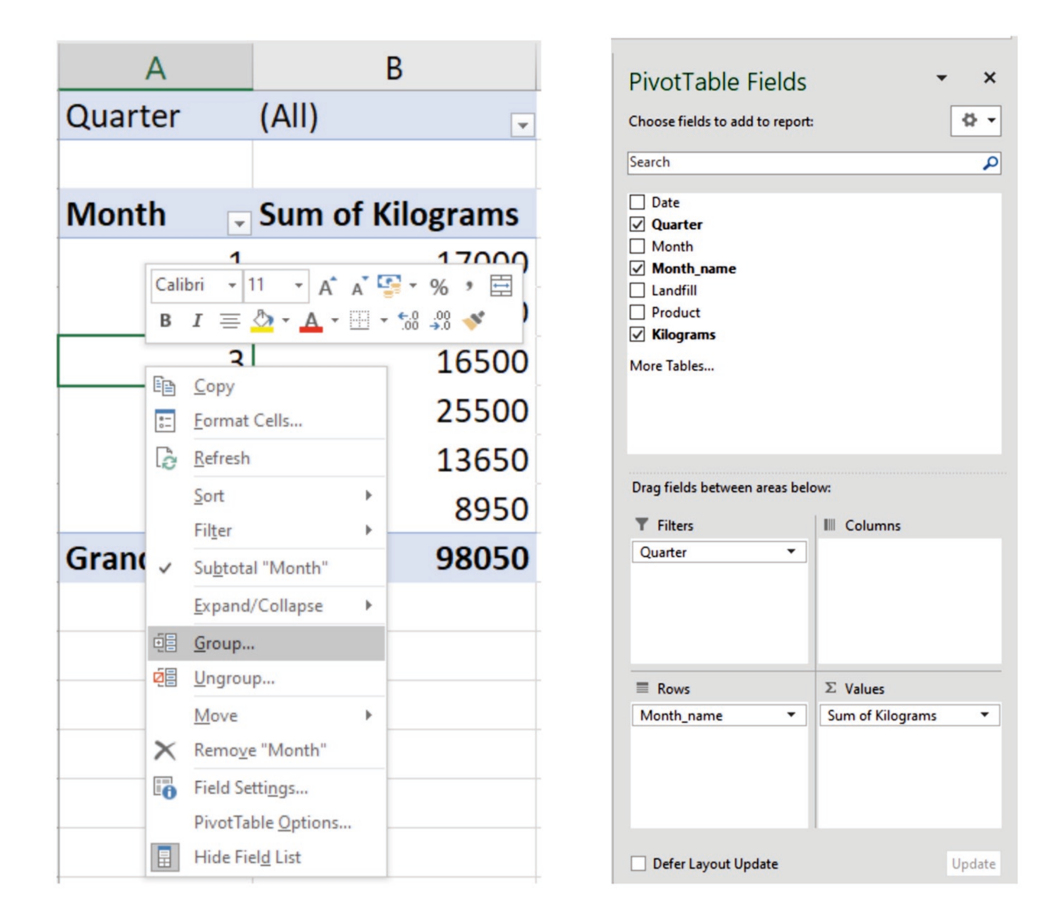


Figure 2.24. Group Option

There is the option to group or ungroup data using the *Group* selection option when they meet the condition to be grouped, e.g. when they belong to the same detailed category. In this case, the months can be presented by quarter.

The months can be grouped into two quarters by selecting the option to aggregate months in groups of three, as shown in Figure 2.25 below.

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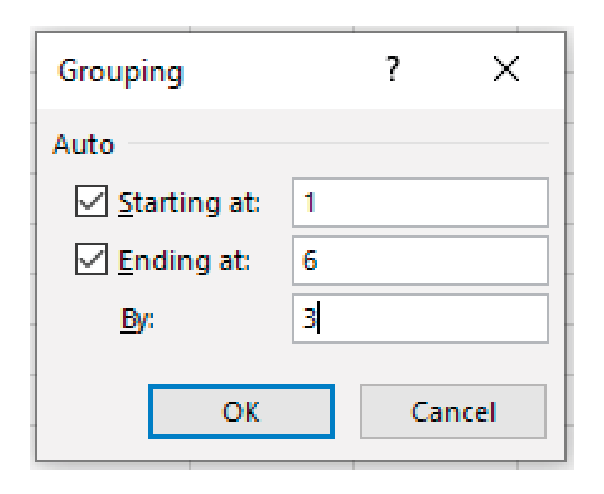
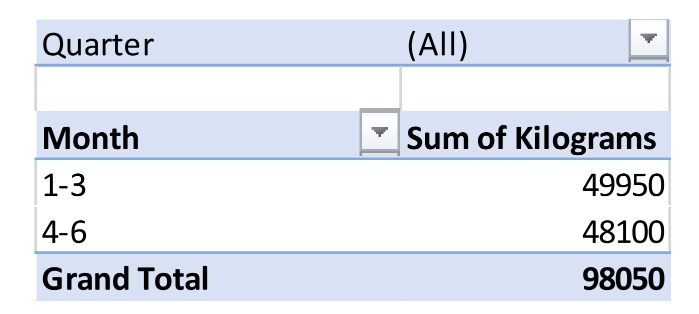


Figure 2.25. Grouping

Table 2.10 is presented with the arrangement shown in Figure 2.25.

Table 2.10. Grouping of kilos by quarters



Quarter	(All)
Month	**Sum of Kilograms**
1-3	49950
4-6	48100
Grand Total	**98050**

The *Ungroup* option is used to break up a group.

Another example of fields grouping would be the one shown in Table 2.11, which presents the grouping of two products, Metal and Plastic, in the same group.

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Table 2.11. Grouping two types of waste in the same group

Quarter	(All)	
Product2	**Product**	**Sum of Kilograms**
⊟ Glass		
	Glass	24350
⊟ Group1		
	Metal	17900
	Plastic	18100
⊟ Paper and cardboard		
	Paper and cardboard	26050
⊟ Textile		
	Textile	11650
Grand Total		**98050**

2.5. INSERTING A TIMESCALE

This option allows a timescale to be used to display data from different time periods, making it comparison easy. In order to use this option, a new column is introduced in the main table (see Annex I) with the accurate dates for each entry.

This requires changes to the data in the pivot table itself so that this new *Date* field is added. The data is not updated, because we are not adding new records (rows) - we are instead adding new fields (columns). To change the source of the table, select the option *Change data source* that appears in the *Analyze* tab, and then select all the desired information (see Figure 2.26).

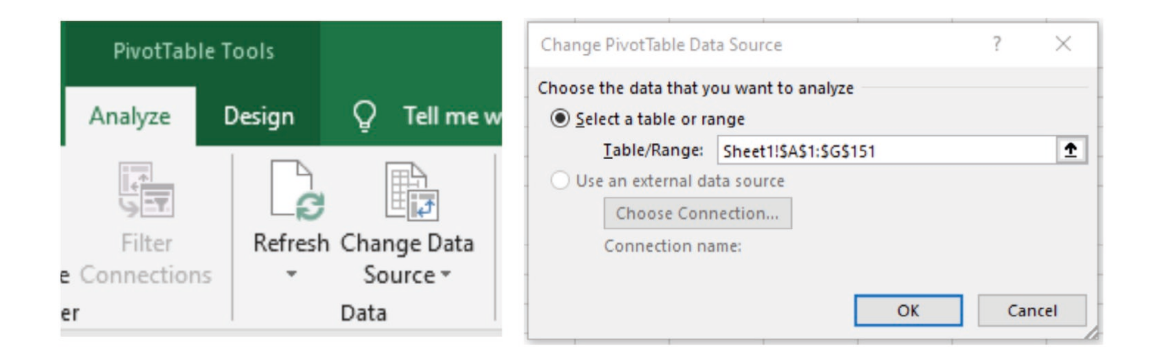


Figure 2.26. Change PivotTable Data Source

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After this new field has been added to the table, click on the *Insert timeline* option that appears on the Insert tab, in the *Filters* section.

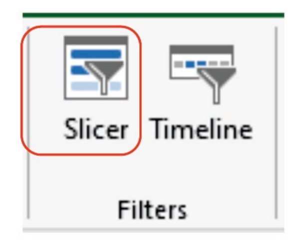


Figure 2.27. Timeline

The following window for inserting a timeline will appear (see Figure 2.28).

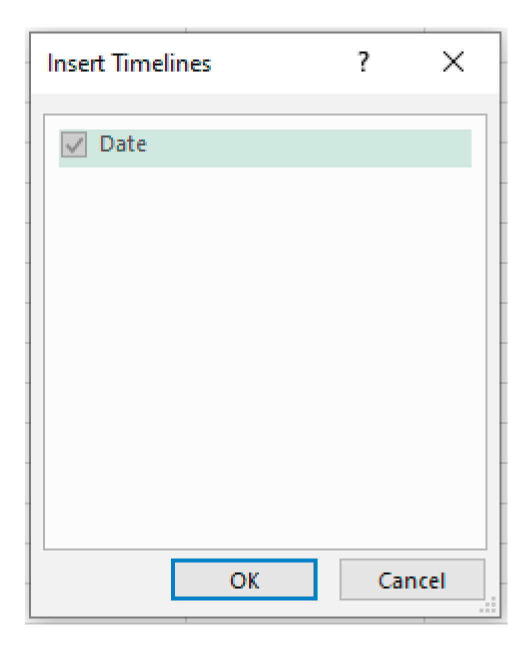


Figure 2.28. Insert Timelines

The *Date* option must be selected and this window will appear. The data can be filtered by the period of time selected (see Figure 2.29).

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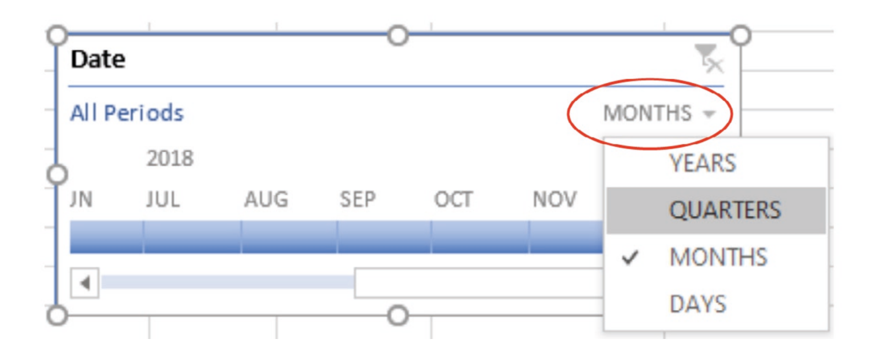
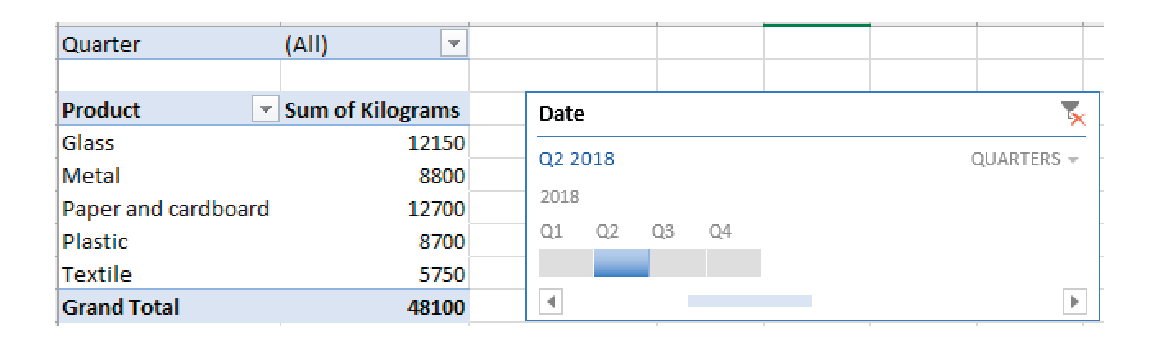


Figure 2.29. Selecting the date to filter the data

For example, using the selection shown in Figure 2.30 below, we can filter the data to obtain only those for the second quarter.



Quarter	(All)
Product	**Sum of Kilograms**
Glass	12150
Metal	8800
Paper and cardboard	12700
Plastic	8700
Textile	5750
Grand Total	**48100**

Figure 2.30. Second quarter data selection example

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Contents

Chapter 3: Direct menu options in a pivot table

3.1. SORT

The *Sort* option allows users to insert an order in the data. An example pivot table must first be created in order to work with this option (see Table 3.1).

Table 3.1. Starting pivot table example

Product	Sum of Kilograms
Glass	24350
Metal	17900
Paper and cardboard	26050
Plastic	18100
Textile	11650
Grand Total	**98050**

By selecting the pivot table and the field to be ordered (in this case the sum of kilograms), and clicking on the right button, Excel displays the *Sort* options shown in Figure 3.1 below.

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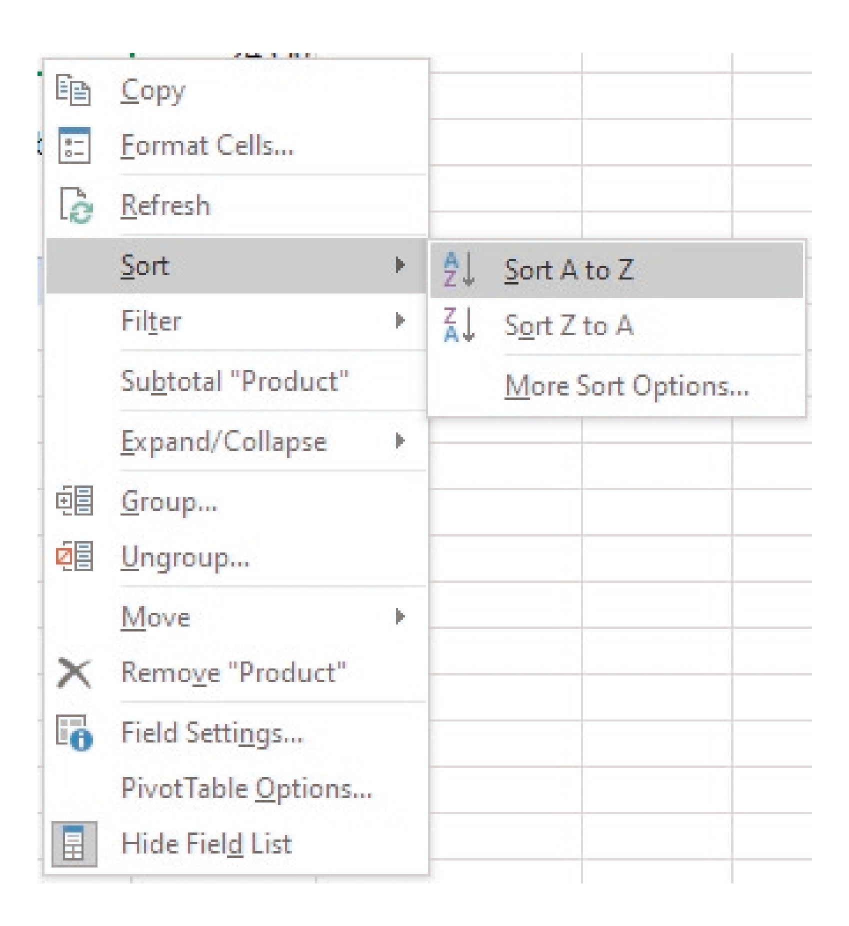


Figure 3.1. Sorting options

If text type fields are selected (the product type field in our example), the sort from lowest to highest becomes descending or ascending (see Table 3.2).

Table 3.2. Sorting the text field in alphabetically descending order

Product	Sum of Kilograms
Glass	24350
Metal	17900
Paper and cardboard	26050
Plastic	18100
Textile	11650
Grand Total	**98050**

To access *More Sort Options*, the dialog box allows users to select between the options shown in Figure 3.2 below. In this dialog you can access *More Options,* when the selected previous data is a value field (e.g. kilos).

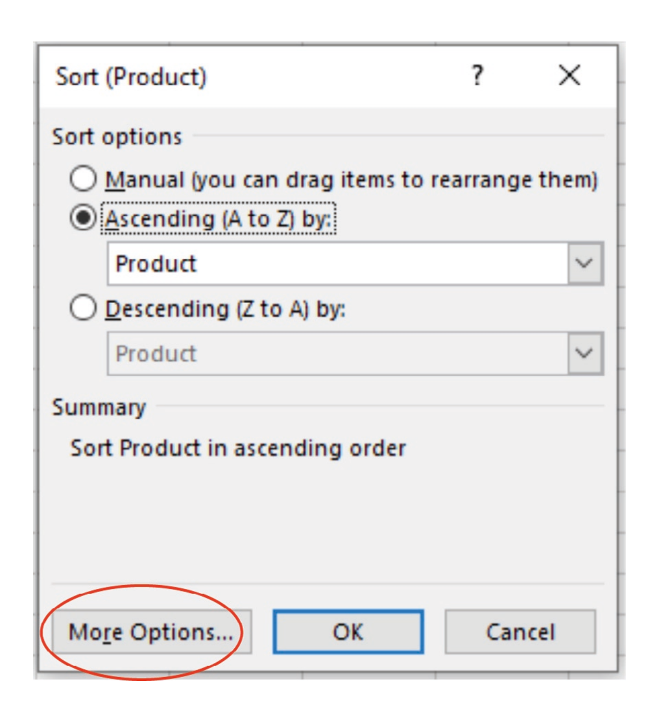


Figure 3.2. More Sort Options dialog box

The *More Sort Options* (see Figure 3.3) allows the user to enter automatic sorting options every time the report is updated.

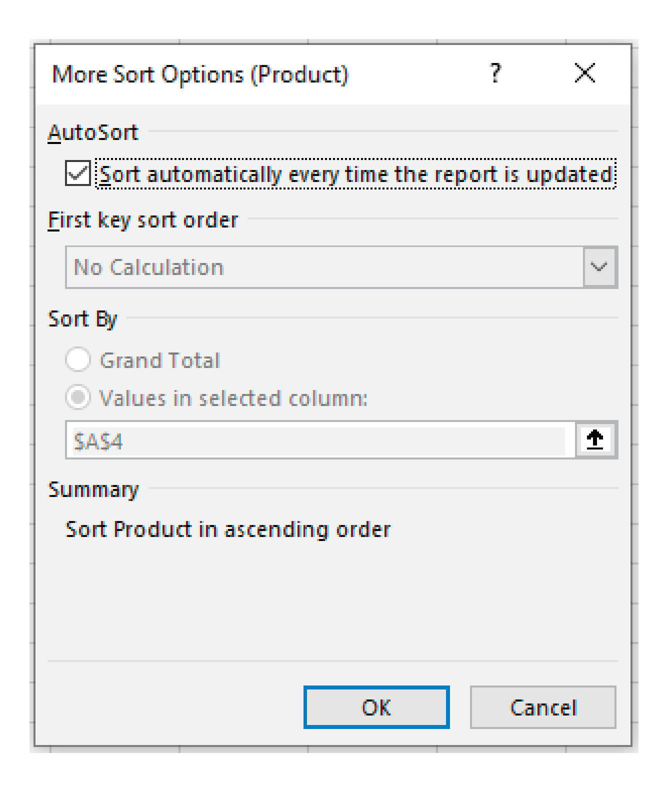


Figure 3.3. More Sort Options

3.2. OTHER OPTIONS IN THE DROP-DOWN MENU

By clicking on the data in any of the pivot tables created with the right button of the mouse, Excel shows a submenu that contains various options, including those for basic formatting. Most of these options have been discussed previously, so they will not be explained again.

When a value field is selected, the options that appear are those shown in Figure 3.4 below, while other options are added for non-value fields (e.g. landfill), as shown in Figure 3.5.

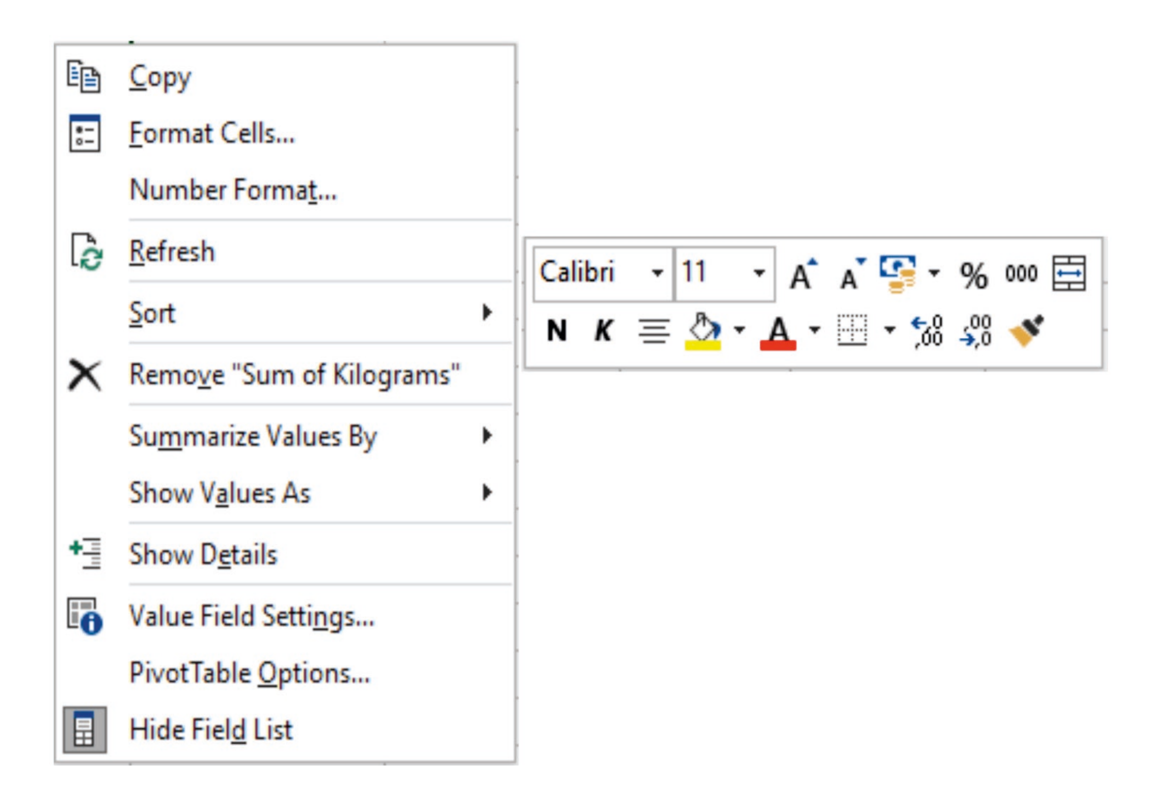


Figure 3.4. Options for non-value fields

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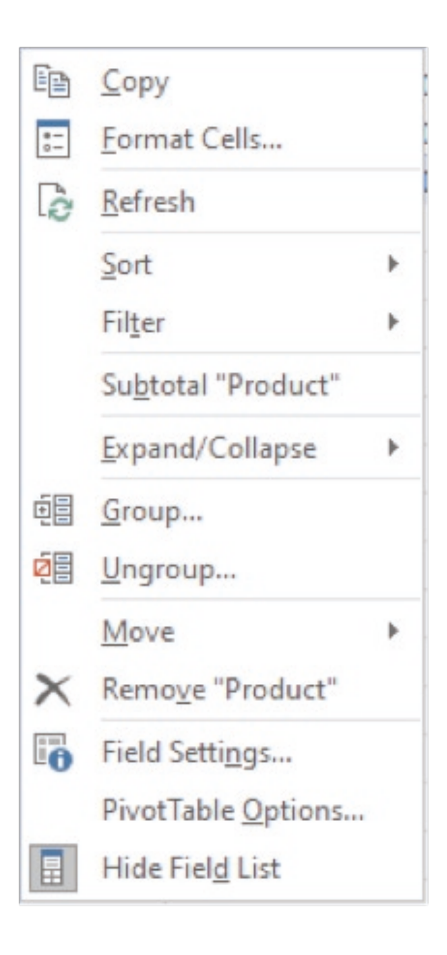


Figure 3.5. Options for non-value fields

3.3. DATA FILTER OPTIONS WITHIN FIELDS

The *Filter* option is shown for this type of non-value field. This filter option is not related to the option shown in the *Subtotals* and *Filters* tab to show the fields, and nor is it related to the *Filter* area in the pivot table related to entering a grouping level in the table, as it shows the data in the fields that meet a condition: being in the top 10 (see Figure 3.6), according to the label's values (see Figure 3.7) and by the value of a field (see Figure 3.8).

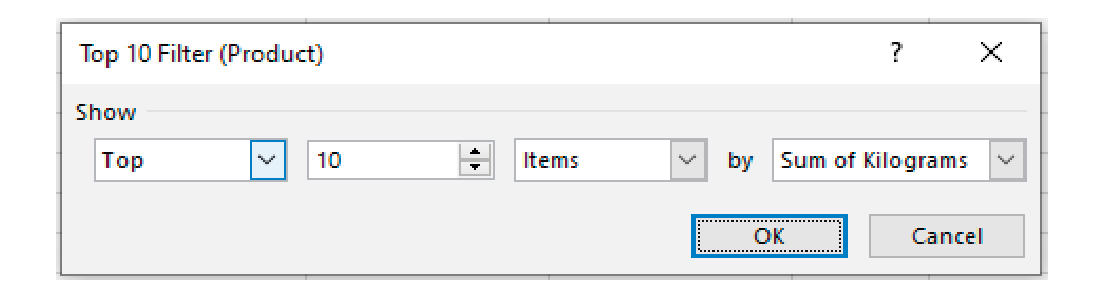


Figure 3.6. Top 10 Filter

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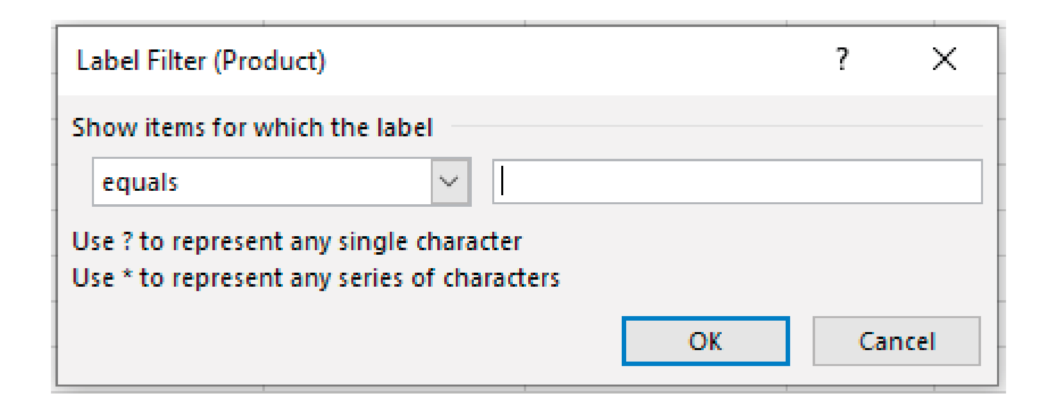


Figure 3.7. Label Filter

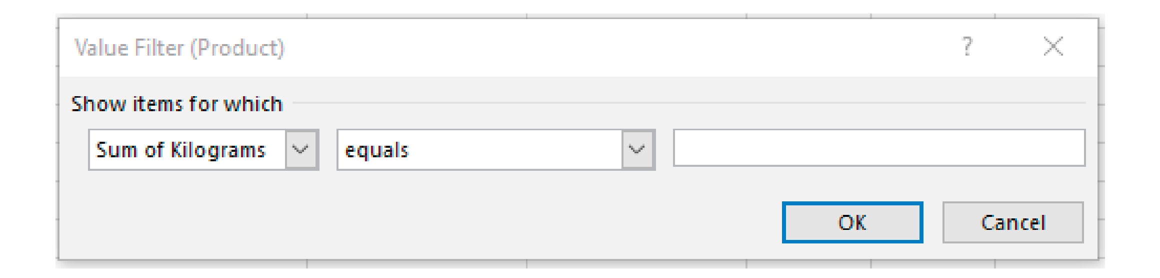


Figure 3.8. Value Filter

Finally, we will introduce a new *Search Filter* to quickly and efficiently access specific product data in large spreadsheets. This type of filter is interactive, as it allows the user to search for the data and make selections according to the element searched. Wildcards can be used, such as an asterisk to search for related names, for example, Castell *; in this case the search would return names such as Castellón, Castellfort and Castellnovo. This filter is applied using the drop-down, in the field shown in Figure 3.9.

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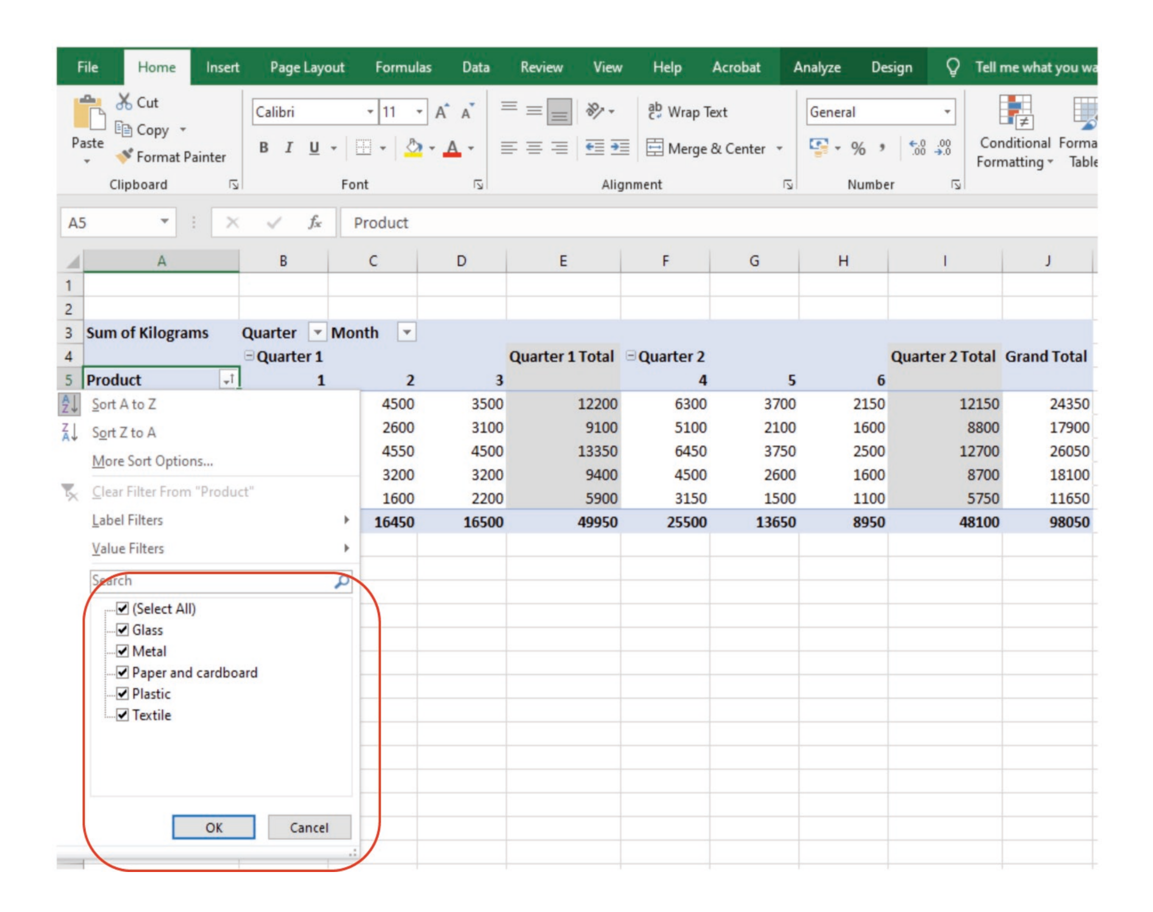


Figure 3.9. Search filter for a field

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Chapter 4: Analyze menu options

4.1. ACTIONS IN THE PIVOT TABLE

Finally, as with any Excel component, you can perform various actions such as *Clear, Select* and *Move Pivot Table* (see Figure 4.1).

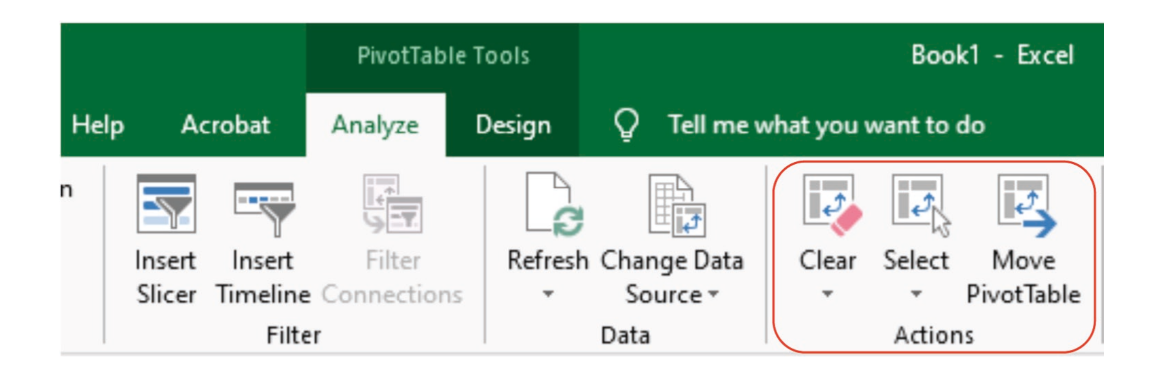


Figure 4.1. Pivot table Actions

4.1.1. Delete actions

Figure 4.2. displays the *Clear options* table.

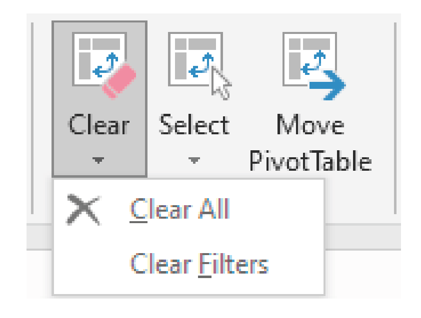


Figure 4.2. Clear options

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Clear All: removes all data from the pivot table, including fields, formatting, and filters.

Clear filters: removes the filters entered.

4.1.2. The Select action

The *Select* action is used to select an item from the pivot table. It is important that the pivot table is selected so that all selection options are displayed. *Labels and Values, Values and Labels* are the options that can be selected (see Figure 4.3).

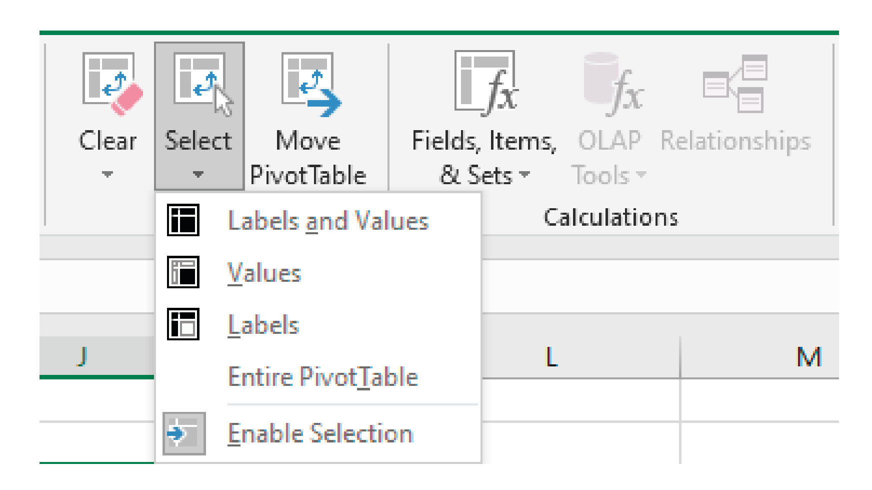


Figure 4.3. Selection options

4.1.3 The Move table action

Move Pivot Table moves the pivot table to a location in the workbook that is being used, as shown in Figure 4.4.

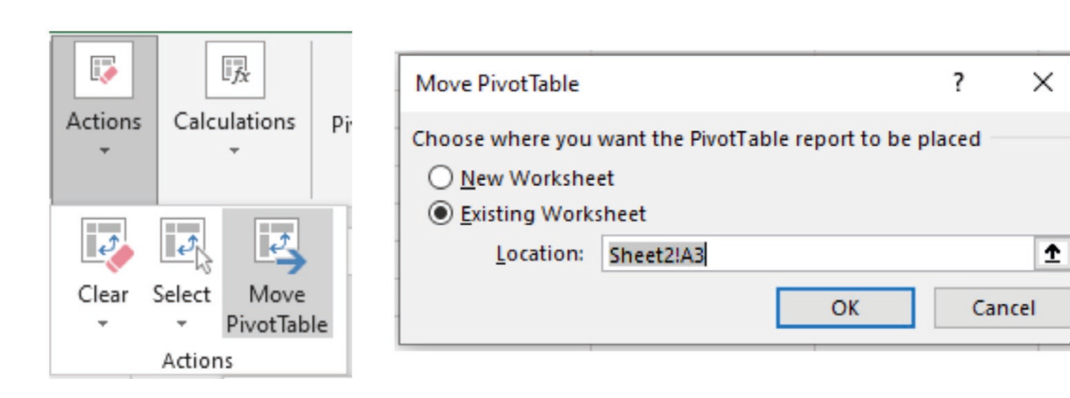


Figure 4.4. Move Pivot Table

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4.2. CALCULATIONS

The *Analyze* tab also includes the *Calculations* section, which has actions which will be described below (see Figure 4.5).

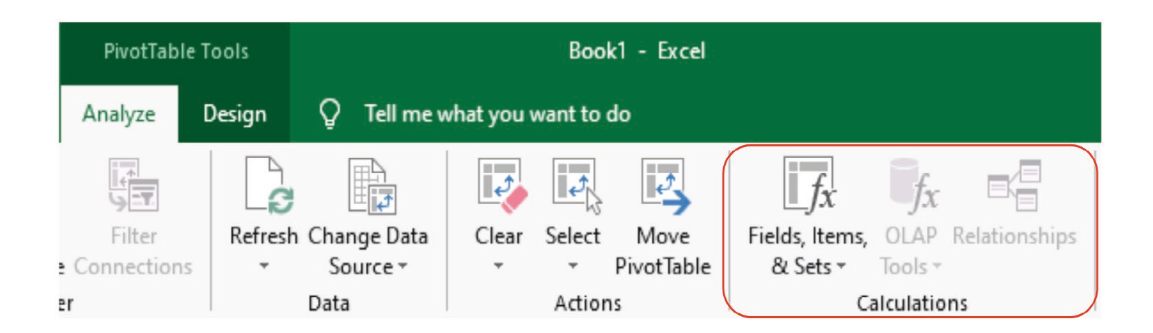


Figure 4.5. Calculations

4.2.1. Fields, Items and Sets

The *Fields, Items & Sets* option allows the calculated fields and elements in a pivot table to be created and modified (see Figure 4.6).



Figure 4.6. Fields, Items & Sets

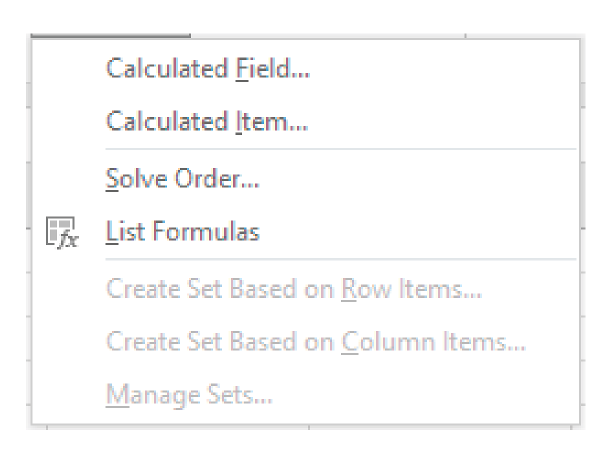


Figure 4.7. Calculated Field

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For example, to make a forecast for the kilos recycled in the third semester (now the data only report information for two semesters), we could estimate that in the second quarter sales will increase by 5%. In order to apply this calculated field option, the following pivot table should first be entered (see Table 4.1).

Table 4.1. Pivot table with data for kilos recycled in the second quarter and product type

Sum of Kilograms	**Quarter**
Product	**Quarter 2**
Glass	12150
Metal	8800
Paper and cardboard	12700
Plastic	8700
Textile	5750
Grand Total	**48100**

If the pivot table and the *Calculated Field* option in *Fields, Items & sets* are selected, the dialog box below will appear (see Figure 4.8).

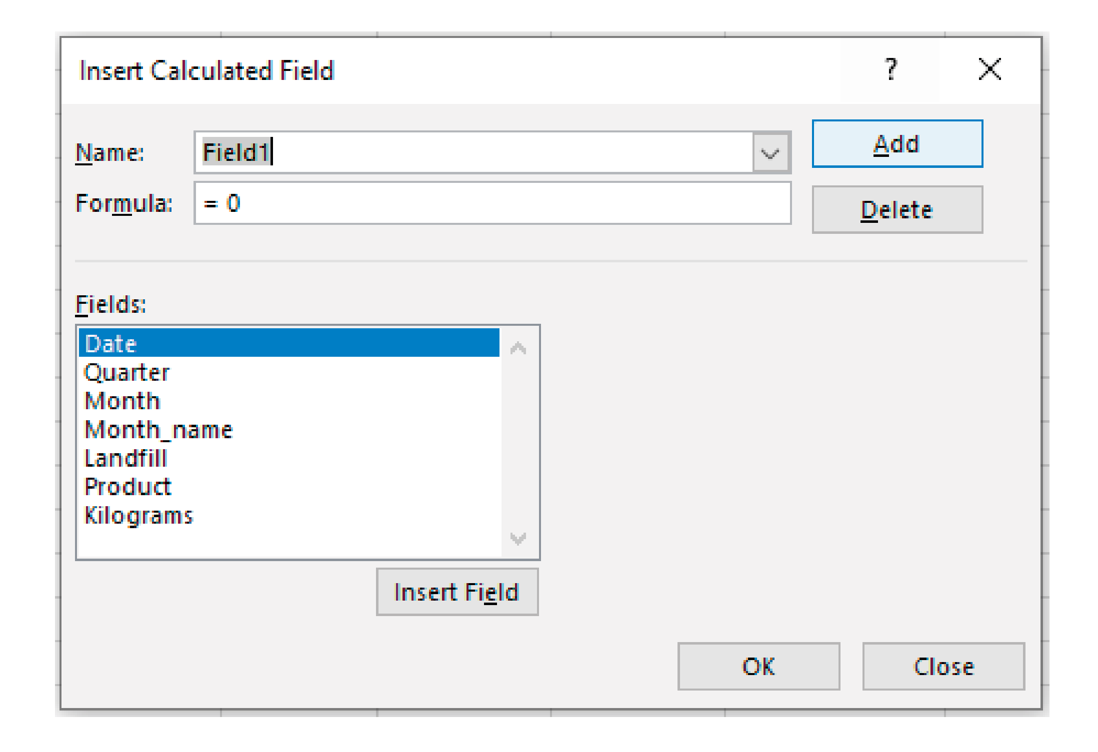


Figure 4.8. Insert Calculated Field

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You should enter a name for this *Field1*. In this case, it identifies the sales forecast for the third quarter. Insert the kilos field in the formula, and multiply them by 1.05 to increase them by 5%, and then *Accept* (see Figure 4.9).

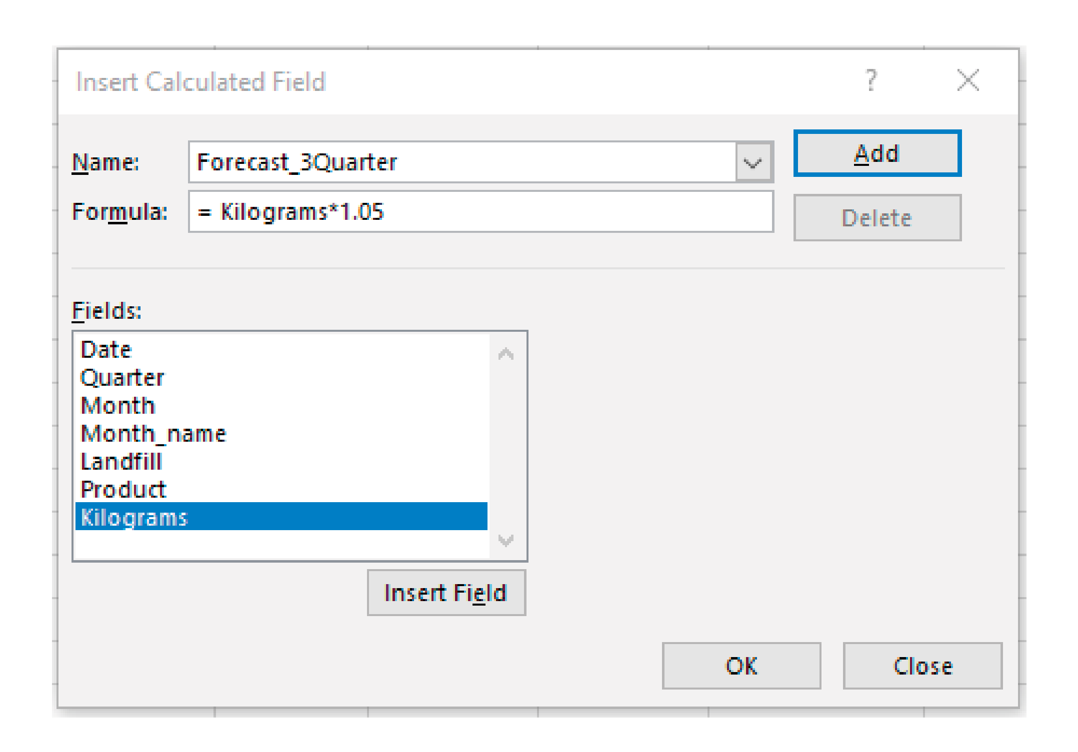


Figure 4.9. Calculated field customization

The result of creating this calculated field is shown in Table 4.2 below.

Table 4.2. Sales forecast in the third quarter

	Quarter	Values
	Quarter 2	
Product	**Sum of Kilograms**	**Sum of Forecast_3Quarter**
Glass	12150	12757.5
Metal	8800	9240
Paper and cardboard	12700	13335
Plastic	8700	9135
Textile	5750	6037.5
Grand Total	**48100**	**50505**

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If you want to delete a calculated field, you should select the field that contains the element to be deleted. On the *Options* tab, in the *Tools* group, click on *Formulas*, and then click on *Calculated Field*. In the *Name* field, select the element to delete, and click on *Delete* (see Figure 4.10).

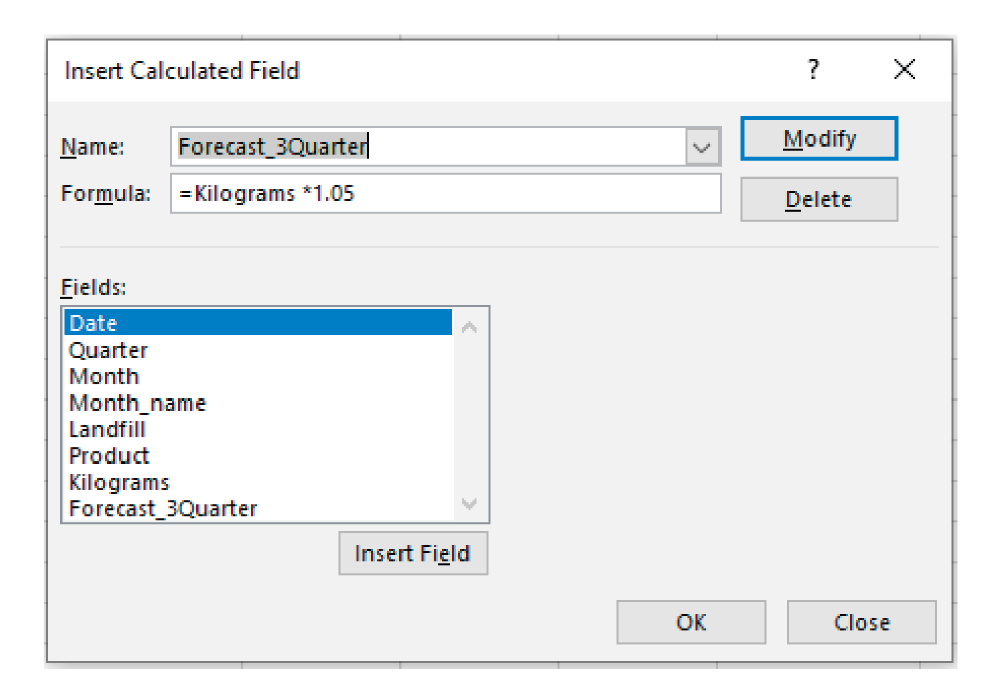


Figure 4.10. Delete calculated field

4.2.2. Calculated Item option

A *Calculated Item* allows you to add a new record or row to the source of the data, by entering a formula that takes the data from other rows (see Figure 4.11).

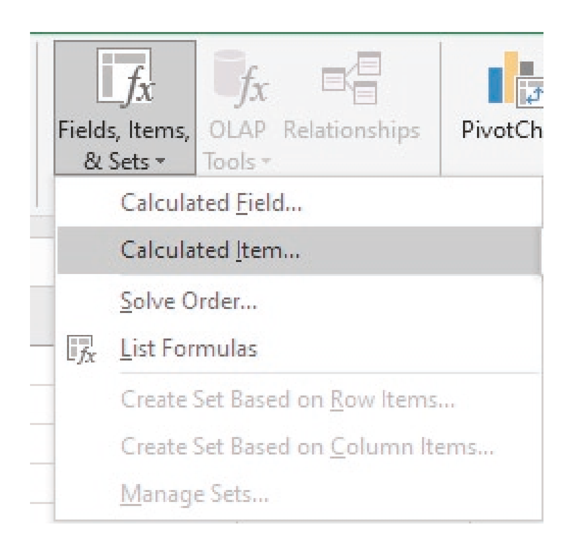


Figure 4.11. Calculated Item option

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To do this, the pivot table below should be entered, which will provide the basis for the rest of the calculations (see Table 4.3).

Table 4.3. Initial pivot table with the sum of kilos for each zone and quarter

Sum of Kilograms	Quarter		
Landfill	Quarter 1	Quarter 2	Grand Total
Landfill 1	8150	7150	15300
Landfill 2	9100	8550	17650
Landfill 3	9500	8450	17950
Landfill 4	10200	11200	21400
Landfill 5	13000	12750	25750
Grand Total	**49950**	**48100**	**98050**

First, place the cursor in a field that can be used as a calculated field (the landfill field in this case). After selecting the pivot table, click on the option *Calculated Item* entered previously (Figure 4.11). The box dialog below will then appear (see Figure 4.12).

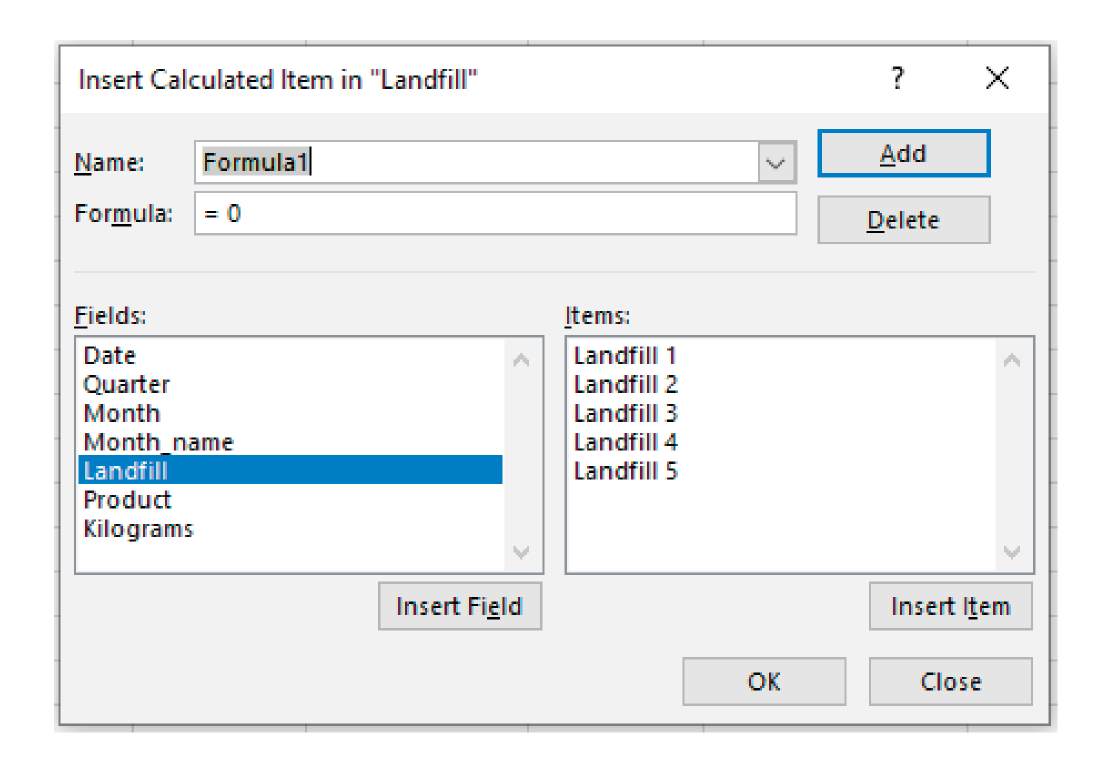


Figure 4.12. Insert Calculated Item in 'Landfill'

In this case, a new formula will be created to obtain 15% of the kilos of recycled product each quarter; the name of the field will be "Increase over the quarter" (see Figure 4.13).

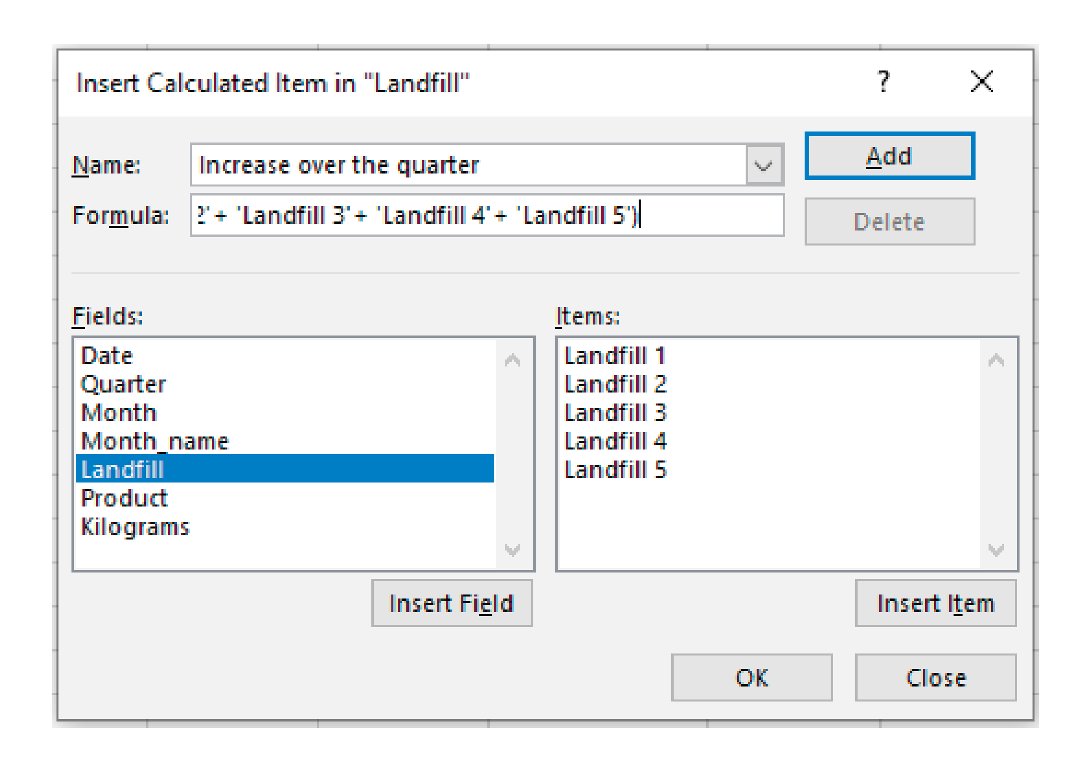


Figure 4.13. Calculated item customization

As a result, a new row of data will be obtained with 15% of the kilos of each quarter from all the landfills (see Table 4.4).

Table 4.4. Row with the assigned quarterly increase

Sum of Kilograms	Quarter		
Landfill	**Quarter 1**	**Quarter 2**	**Grand Total**
Landfill 1	8150	7150	15300
Landfill 2	9100	8550	17650
Landfill 3	9500	8450	17950
Landfill 4	10200	11200	21400
Landfill 5	13000	12750	25750
Increase over the quarter	7492.5	7215	14707.5
Grand Total	**57442.5**	**55315**	**112757.5**

To delete a calculated element, click on the field that contains the element to be deleted, and on the *Options* tab, in the *Tools* group, select *Formulas*, *Calculated Item*, in the same way as previously when deleting a calculated field (see Figure 4.10). In the Name option, select the element to delete, and press the *Delete* button.

4.3. ANALYZE MENU TOOLS

This tab contains two main sections - *Pivot Chart* and *Recommended Pivot Tables*, as shown in Figure 4.14 below.

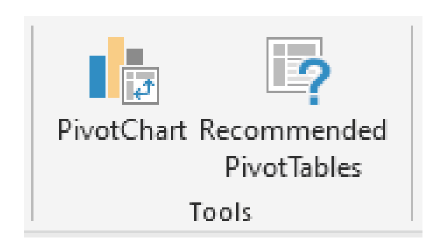


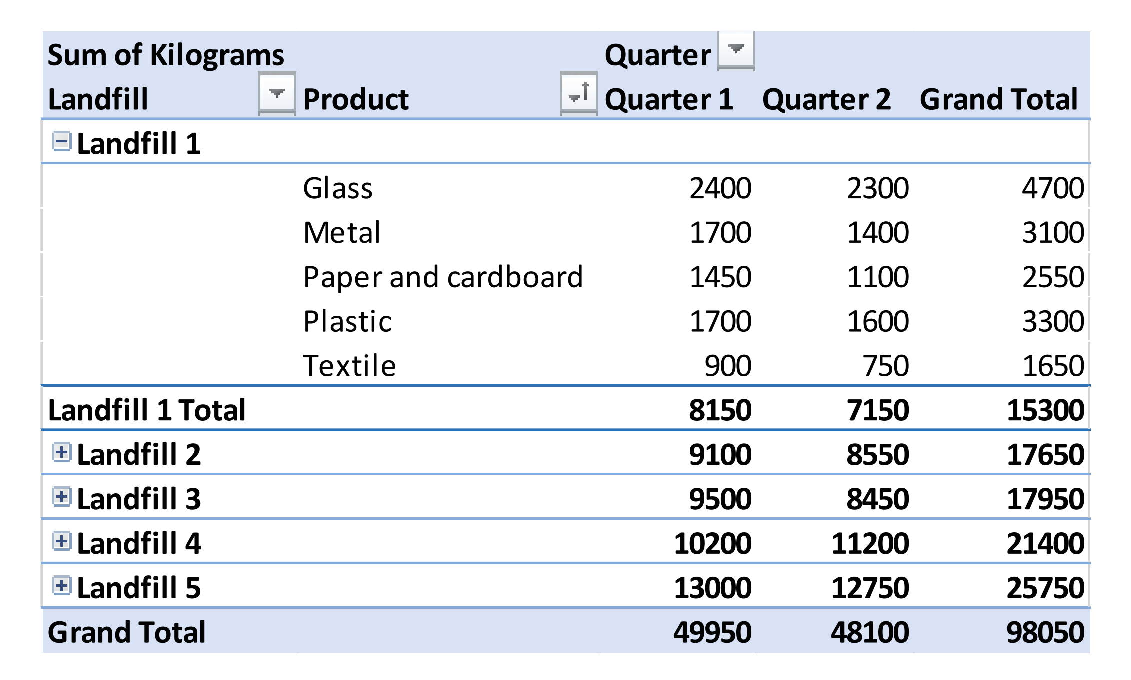
Figure 4.14. Tools

The *Pivot Chart* option creates charts based on the data in the pivot table the user is working with.

The *Recommended Pivot Tables* option provides a series of recommended pivot tables that can be created from the source data (see Figure 4.15).

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Sum of Kilograms		Quarter		
Landfill	Product	Quarter 1	Quarter 2	Grand Total
Landfill 1				
	Glass	2400	2300	4700
	Metal	1700	1400	3100
	Paper and cardboard	1450	1100	2550
	Plastic	1700	1600	3300
	Textile	900	750	1650
Landfill 1 Total		**8150**	**7150**	**15300**
Landfill 2		**9100**	**8550**	**17650**
Landfill 3		**9500**	**8450**	**17950**
Landfill 4		**10200**	**11200**	**21400**
Landfill 5		**13000**	**12750**	**25750**
Grand Total		**49950**	**48100**	**98050**

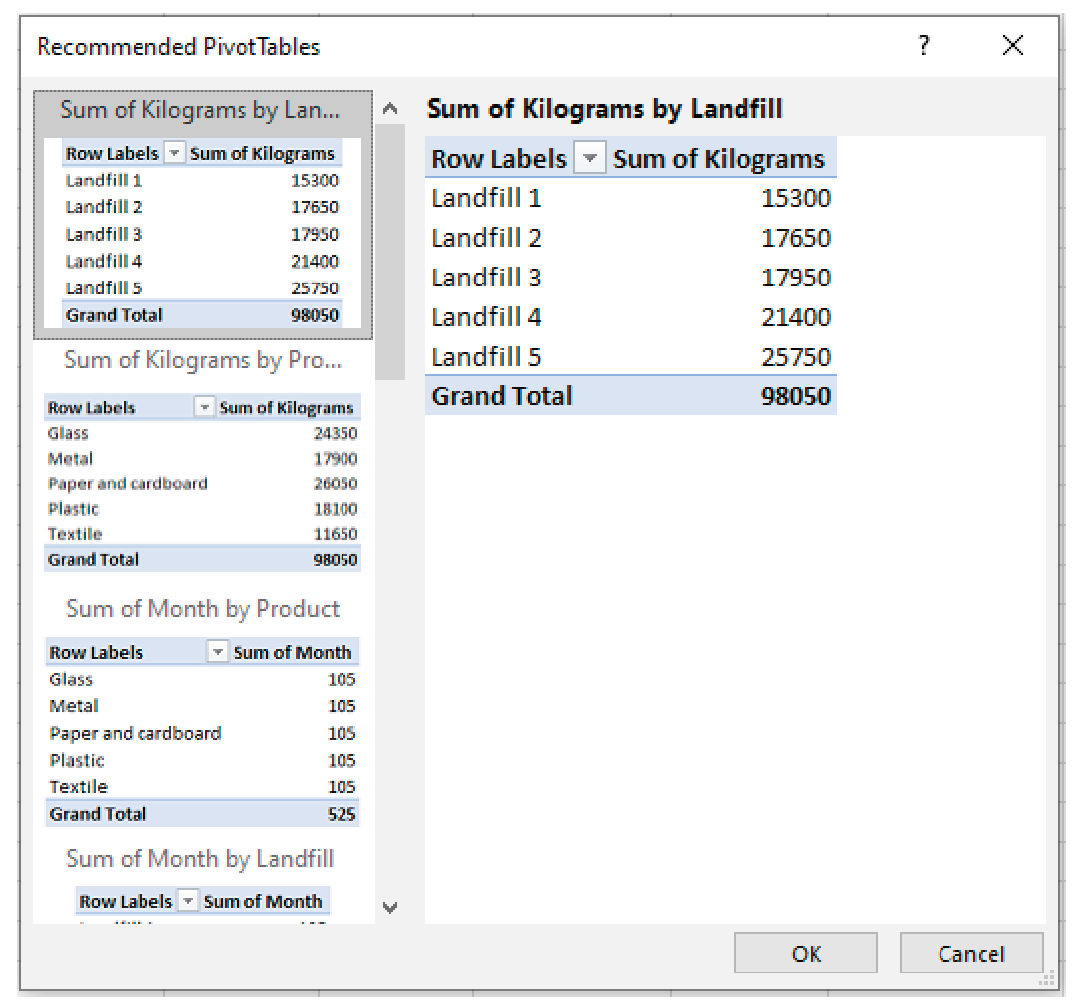


Figure 4.15. Recommended Pivot Tables

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4.4. SHOW

In this section, we will discuss the functionalities grouped in the *Show* tab (see Figure 4.16).

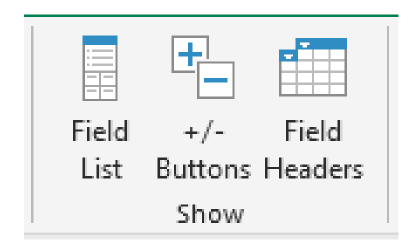


Figure 4.16. Controls on the Show tab

The options appearing in this group of controls are:

1. *Field List*, which shows or hides the list of fields and allows the user to add and remove fields in the pivot table being worked on (see Figure 4.17).

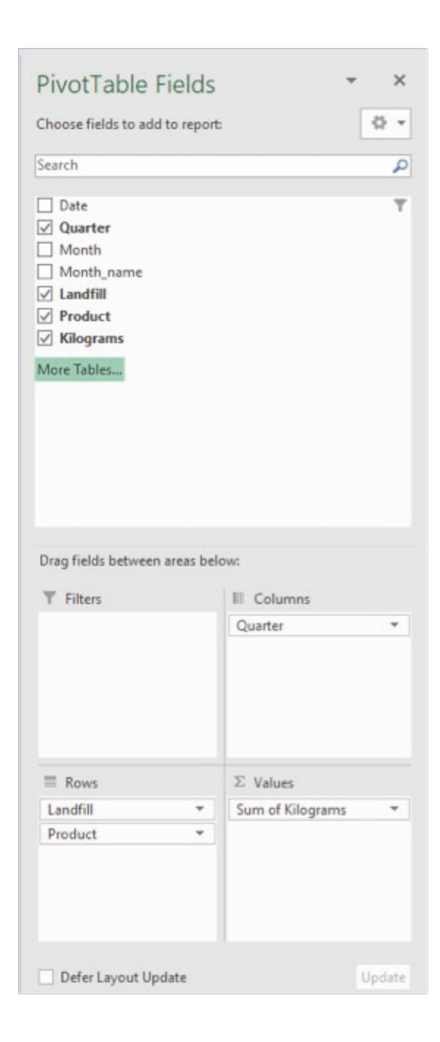


Figure 4.17. Pivot table controls

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2. *+/- Buttons Shows*, which shows or hides the elements in a pivot table (see Table 4.5).

Table 4.5. Show or hide elements

Sum of Kilograms		Quarter		
Landfill	Product	Quarter 1	Quarter 2	Grand Total
⊟ Landfill 1				
	Glass	2400	2300	4700
	Metal	1700	1400	3100
	Paper and cardboard	1450	1100	2550
	Plastic	1700	1600	3300
	Textile	900	750	1650
Landfill 1 Total		**8150**	**7150**	**15300**
⊞ Landfill 2		**9100**	**8550**	**17650**
⊟ Landfill 3				
	Glass	2100	1900	4000
	Metal	1300	1450	2750
	Paper and cardboard	3100	2800	5900
	Plastic	2100	1700	3800
	Textile	900	600	1500
Landfill 3 Total		**9500**	**8450**	**17950**
⊞ Landfill 4		**10200**	**11200**	**21400**
⊞ Landfill 5		**13000**	**12750**	**25750**
Grand Total		**49950**	**48100**	**98050**

3. *Field Headers*, which shows or hides the headings in a pivot table by rows and columns.

Tables 4.6 and 4.7 show different types of headings.

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Table 4.6. Example of a pivot table with headers

Sum of Kilograms		Quarter		
Landfill	Product	Quarter 1	Quarter 2	Grand Total
Landfill 1				
	Glass	2400	2300	4700
	Metal	1700	1400	3100
	Paper and cardboard	1450	1100	2550
	Plastic	1700	1600	3300
	Textile	900	750	1650
Landfill 1 Total		**8150**	**7150**	**15300**
Landfill 2				
	Glass	1800	1450	3250
	Metal	1900	1500	3400
	Paper and cardboard	2300	2350	4650
	Plastic	1900	2000	3900
	Textile	1200	1250	2450
Landfill 2 Total		**9100**	**8550**	**17650**
Landfill 3		**9500**	**8450**	**17950**
Landfill 4		**10200**	**11200**	**21400**
Landfill 5		**13000**	**12750**	**25750**
Grand Total		**49950**	**48100**	**98050**

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Table 4.7. Example of a pivot table without headers

Sum of Kilograms				
		Quarter 1	Quarter 2	Grand Total
Landfill 1				
	Glass	2400	2300	4700
	Metal	1700	1400	3100
	Paper and cardboard	1450	1100	2550
	Plastic	1700	1600	3300
	Textile	900	750	1650
Landfill 1 Total		**8150**	**7150**	**15300**
Landfill 2				
	Glass	1800	1450	3250
	Metal	1900	1500	3400
	Paper and cardboard	2300	2350	4650
	Plastic	1900	2000	3900
	Textile	1200	1250	2450
Landfill 2 Total		**9100**	**8550**	**17650**
Landfill 3		**9500**	**8450**	**17950**
Landfill 4		**10200**	**11200**	**21400**
Landfill 5		**13000**	**12750**	**25750**
Grand Total		**49950**	**48100**	**98050**

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Chapter 5: Design menu options

In this chapter, we show all the options in the *Design* menu (see Figure 5.1) that appear once the pivot table is shown.

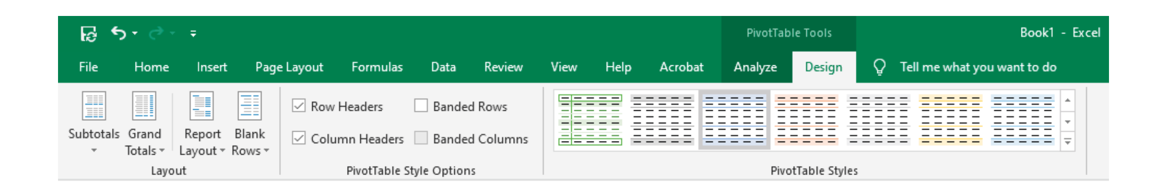


Figure 5.1. Design menu options

5.1. DESIGN MENU OPTIONS

Four different functionalities can be used in the *Design* tab: *Subtotal, Grand Totals, Report Layout and Blank Rows* (see Figure 5.2).

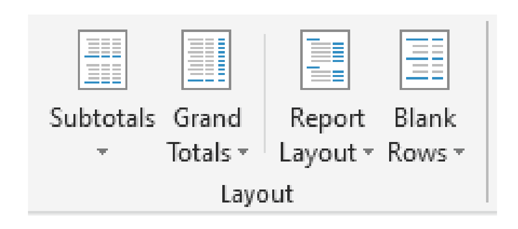


Figure 5.2. Layout options

Starting with the example of landfills, the uses of each of these functionalities are outlined below (see table 5.1).

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Table 5.1. Starting pivot table example

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

5.1.1. The Subtotals function

This function is used to show or hide subtotals in the pivot table, and means that the subtotals can be hidden, or shown at the top or bottom (see Figure 5.3).

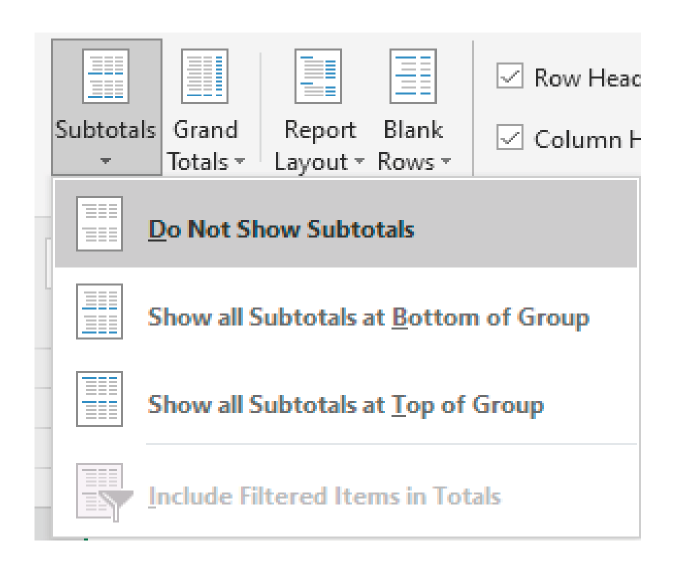


Figure 5.3. Subtotals function

Continuing with our example, when the *Design*, *Do Not Show Subtotals* option is selected, the subtotals do not appear for the landfills.

Table 5.2. Pivot table without subtotals

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

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On the other hand, if the option chosen is *Show all Subtotals at Bottom of Group*, the subtotals of the number of kilos for each landfill will appear again (see Table 5.3).

Table 5.3. Pivot table with Show all Subtotals at Bottom of Group

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Finally, if you choose to *Show all Subtotals at Top of Group*, the result is similar to the previous option, but the location of the subtotals changes, as they now appear at the top, just before each location or province (see Table 5.4).

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Table 5.4. Pivot table with option Show all Subtotals at Bottom of Group

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Note:

If the tabular layout is chosen, rather than the compact or outline layout, the row showing all subtotals at the top is not available.

5.1.2. Grand totals

As can be seen from its name, the Grand Totals symbol is used to show or hide the *Grand Totals* in the pivot table. This symbol provides four options (see Figure 5.4):

- *Off for Rows and Columns.*
- *On for Rows and Columns.*
- *On for Rows only.*
- *On for Columns only.*

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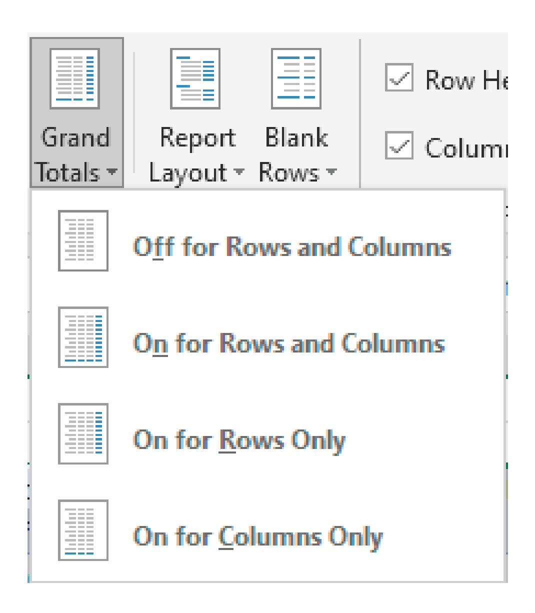


Figure 5.4. Grand totals

The result of applying each of these options to the example of a pivot table with the number of kilos per type of product is shown below (see Table 5.5).

Table 5.5. Initial pivot table example

Sum of Kilograms	Month						
Product	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Glass	4200	4500	3500	6300	3700	2150	24350
Metal	3400	2600	3100	5100	2100	1600	17900
Paper and cardboard	4300	4550	4500	6450	3750	2500	26050
Plastic	3000	3200	3200	4500	2600	1600	18100
Textile	2100	1600	2200	3150	1500	1100	11650
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

The *Off for Rows and Columns* option means that grand totals are not shown for either rows or columns (see Table 5.6).

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Table 5.6. Pivot table with grand totals Off for Rows and Columns

Sum of Kilograms	Month					
Product	1	2	3	4	5	6
Glass	4200	4500	3500	6300	3700	2150
Metal	3400	2600	3100	5100	2100	1600
Paper and cardboard	4300	4550	4500	6450	3750	2500
Plastic	3000	3200	3200	4500	2600	1600
Textile	2100	1600	2200	3150	1500	1100

The option *On for Rows and Columns* is used to show the grand totals for both rows and columns (see Table 5.7).

Table 5.7. Pivot table with grand totals On for Rows and Columns

Sum of Kilograms	Month						
Product	1	2	3	4	5	6	Grand Total
Glass	4200	4500	3500	6300	3700	2150	24350
Metal	3400	2600	3100	5100	2100	1600	17900
Paper and cardboard	4300	4550	4500	6450	3750	2500	26050
Plastic	3000	3200	3200	4500	2600	1600	18100
Textile	2100	1600	2200	3150	1500	1100	11650
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

If you click on *On for Rows Only*, the totals will only appear in the rows (see Table 5.8).

Table 5.8. Pivot table with grand totals On for Rows Only

Sum of Kilograms	Month						
Product	1	2	3	4	5	6	Grand Total
Glass	4200	4500	3500	6300	3700	2150	24350
Metal	3400	2600	3100	5100	2100	1600	17900
Paper and cardboard	4300	4550	4500	6450	3750	2500	26050
Plastic	3000	3200	3200	4500	2600	1600	18100
Textile	2100	1600	2200	3150	1500	1100	11650

Finally, if *On for Columns only* is selected, Excel gives a table in which only the column totals appear (see Table 5.9).

Table 5.9. Pivot table with grand totals On for Columns Only

Sum of Kilograms	Month					
Product	1	2	3	4	5	6
Glass	4200	4500	3500	6300	3700	2150
Metal	3400	2600	3100	5100	2100	1600
Paper and cardboard	4300	4550	4500	6450	3750	2500
Plastic	3000	3200	3200	4500	2600	1600
Textile	2100	1600	2200	3150	1500	1100
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**

5.1.3. The Report Layout function

The *Report Layout* function provides a choice between different ways of presenting the pivot table: in compact form, in outline form, in tabular form and repeating or not repeating the labels of the items (see Figure 5.5).

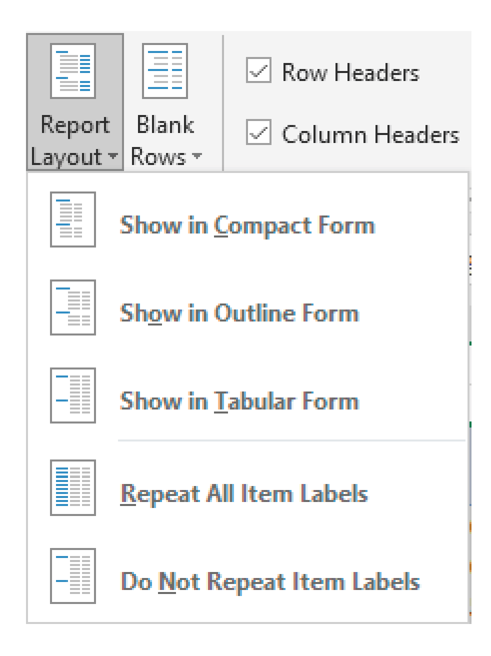


Figure 5.5. Options in Report Layout

Continuing with the example of landfills, the appearance of the pivot table if each of the options indicated were applied is shown below (see Tables 5.10-5.14).

Table 5.10. Show in Compact Form

Sum of Kilograms	Column Labels						
Row Labels	1	2	3	4	5	6	Grand Total
Landfill 1	**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
Glass	900	800	700	1350	600	350	4700
Metal	400	500	800	600	400	400	3100
Paper and cardboard	300	450	700	450	300	350	2550
Plastic	600	500	600	900	400	300	3300
Textile	300	200	400	450	100	200	1650
Landfill 2	**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
Glass	500	600	700	750	400	300	3250
Metal	700	400	800	1050	300	150	3400
Paper and cardboard	800	800	700	1200	650	500	4650
Plastic	700	600	600	1050	500	450	3900
Textile	500	300	400	750	300	200	2450
Landfill 3	**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
Glass	700	800	600	1050	700	150	4000
Metal	600	400	300	900	300	250	2750
Paper and cardboard	1000	1100	1000	1500	900	400	5900
Plastic	500	700	900	750	600	350	3800
Textile	200	300	400	300	200	100	1500
Landfill 4	**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
Glass	800	900	300	1200	700	600	4500
Metal	900	700	500	1350	600	350	4400
Paper and cardboard	1500	1400	800	2250	1200	650	7800
Plastic	200	300	700	300	200	200	1900
Textile	600	400	200	900	300	400	2800
Landfill 5	**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Glass	1300	1400	1200	1950	1300	750	7900
Metal	800	600	700	1200	500	450	4250
Paper and cardboard	700	800	1300	1050	700	600	5150
Plastic	1000	1100	400	1500	900	300	5200
Textile	500	400	800	750	600	200	3250
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Table 5.11. Show in Outline Form

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

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Table 5.12. Show in Tabular Form

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
⊟Landfill 1	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
⊟Landfill 2	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
⊟Landfill 3	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
⊟Landfill 4	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
⊟Landfill 5	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Table 5.13. Repeat All Item Labels

Sum of Kilograms		Month						
Landfill	**Product**	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
Landfill 1	Glass	900	800	700	1350	600	350	4700
Landfill 1	Metal	400	500	800	600	400	400	3100
Landfill 1	Paper and cardboard	300	450	700	450	300	350	2550
Landfill 1	Plastic	600	500	600	900	400	300	3300
Landfill 1	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
Landfill 2	Glass	500	600	700	750	400	300	3250
Landfill 2	Metal	700	400	800	1050	300	150	3400
Landfill 2	Paper and cardboard	800	800	700	1200	650	500	4650
Landfill 2	Plastic	700	600	600	1050	500	450	3900
Landfill 2	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
Landfill 3	Glass	700	800	600	1050	700	150	4000
Landfill 3	Metal	600	400	300	900	300	250	2750
Landfill 3	Paper and cardboard	1000	1100	1000	1500	900	400	5900
Landfill 3	Plastic	500	700	900	750	600	350	3800
Landfill 3	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
Landfill 4	Glass	800	900	300	1200	700	600	4500
Landfill 4	Metal	900	700	500	1350	600	350	4400
Landfill 4	Paper and cardboard	1500	1400	800	2250	1200	650	7800
Landfill 4	Plastic	200	300	700	300	200	200	1900
Landfill 4	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Landfill 5	Glass	1300	1400	1200	1950	1300	750	7900
Landfill 5	Metal	800	600	700	1200	500	450	4250
Landfill 5	Paper and cardboard	700	800	1300	1050	700	600	5150
Landfill 5	Plastic	1000	1100	400	1500	900	300	5200
Landfill 5	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

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Table 5.14. Do Not Repeat Item Labels

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

5.1.4. Blank rows

This option is used to insert a blank row between each grouped item in the pivot table. Once the row is inserted, there is also the option to return to the initial situation (see Figure 5.6).

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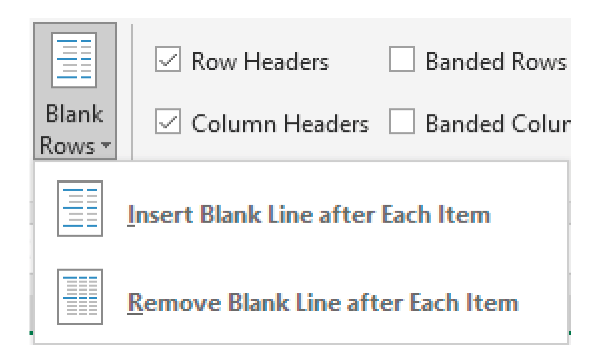


Figure 5.6. Insert Blank Rows

If the option *Insert Blank Lines after Each Item* is activated, the result would be as shown in Table 5.15 below.

Table 5.15. Example of Blank Lines after Each Item in the landfills example

Sum of Kilograms		Month						
Landfill	**Product**	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

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If the *Remove Blank Line after Each Item* option is selected, it will return to the starting point where there is no blank line.

5.2. PIVOT TABLE STYLE OPTIONS

The available set of pivot table style options is designed to make the data summarized in the table easier to read, by highlighting different parts of the table using bold text or shading. There are four options that can be enabled simultaneously or separately (see Figure 5.7).

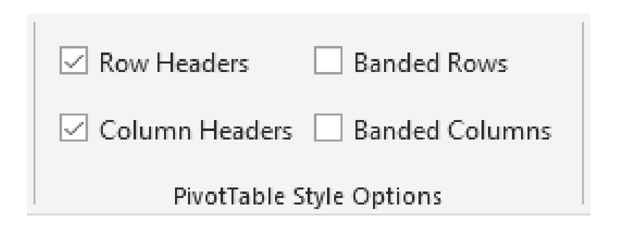


Figure 5.7. Pivot Table Style Options

Continuing with the example used in previous sections, tables 5.16-5.20 below show the results of applying each of these options.

Contents

Table 5.16. Row Headers

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
Landfill 1		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 2		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 3		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 4		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 5		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

The table changes when the *Row Headers* option is enabled and disabled.

Table 5.17. Column Headers

Sum of Kilograms		Month						
Landfill	**Product**	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
⊟Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
⊟Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
⊟Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
⊟Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
⊟Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

When the *Column Headers* option is enabled, the first row of the table where the headings or names of each column are located is highlighted.

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Table 5.18. Banded Rows

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
⊟Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
⊟Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
⊟Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
⊟Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
⊟Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Using the *Banded Rows* option, some rows are alternately shaded, so that even rows appear in a different format to odd ones.

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Table 5.19. Banded Columns

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
⊟Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
⊟Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
⊟Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
⊟Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
⊟Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

In a similar way to the *Banded Rows* option, this time the shading appears in some columns, creating a presentation where one column with shading and another without shading alternate. Both this option and the one above are useful when the pivot table contains a lot of data, since it makes reading easier. Finally, Table 5.20 shows an example of a table with all the options above enabled.

Table 5.20. Example with all Pivot Table Style Options enabled

Sum of Kilograms		Month						
Landfill	Product	1	2	3	4	5	6	Grand Total
⊟Landfill 1								
	Glass	900	800	700	1350	600	350	4700
	Metal	400	500	800	600	400	400	3100
	Paper and cardboard	300	450	700	450	300	350	2550
	Plastic	600	500	600	900	400	300	3300
	Textile	300	200	400	450	100	200	1650
Landfill 1 Total		**2500**	**2450**	**3200**	**3750**	**1800**	**1600**	**15300**
⊟Landfill 2								
	Glass	500	600	700	750	400	300	3250
	Metal	700	400	800	1050	300	150	3400
	Paper and cardboard	800	800	700	1200	650	500	4650
	Plastic	700	600	600	1050	500	450	3900
	Textile	500	300	400	750	300	200	2450
Landfill 2 Total		**3200**	**2700**	**3200**	**4800**	**2150**	**1600**	**17650**
⊟Landfill 3								
	Glass	700	800	600	1050	700	150	4000
	Metal	600	400	300	900	300	250	2750
	Paper and cardboard	1000	1100	1000	1500	900	400	5900
	Plastic	500	700	900	750	600	350	3800
	Textile	200	300	400	300	200	100	1500
Landfill 3 Total		**3000**	**3300**	**3200**	**4500**	**2700**	**1250**	**17950**
⊟Landfill 4								
	Glass	800	900	300	1200	700	600	4500
	Metal	900	700	500	1350	600	350	4400
	Paper and cardboard	1500	1400	800	2250	1200	650	7800
	Plastic	200	300	700	300	200	200	1900
	Textile	600	400	200	900	300	400	2800
Landfill 4 Total		**4000**	**3700**	**2500**	**6000**	**3000**	**2200**	**21400**
⊟Landfill 5								
	Glass	1300	1400	1200	1950	1300	750	7900
	Metal	800	600	700	1200	500	450	4250
	Paper and cardboard	700	800	1300	1050	700	600	5150
	Plastic	1000	1100	400	1500	900	300	5200
	Textile	500	400	800	750	600	200	3250
Landfill 5 Total		**4300**	**4300**	**4400**	**6450**	**4000**	**2300**	**25750**
Grand Total		**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

5.3. PIVOT TABLE STYLES

Various predefined styles can be applied to a pivot table using this option, which is a quick way to improve the presentation of the table. It is possible to choose between different intensities of colours or present the rows or columns with bands (see Figure 5.8).

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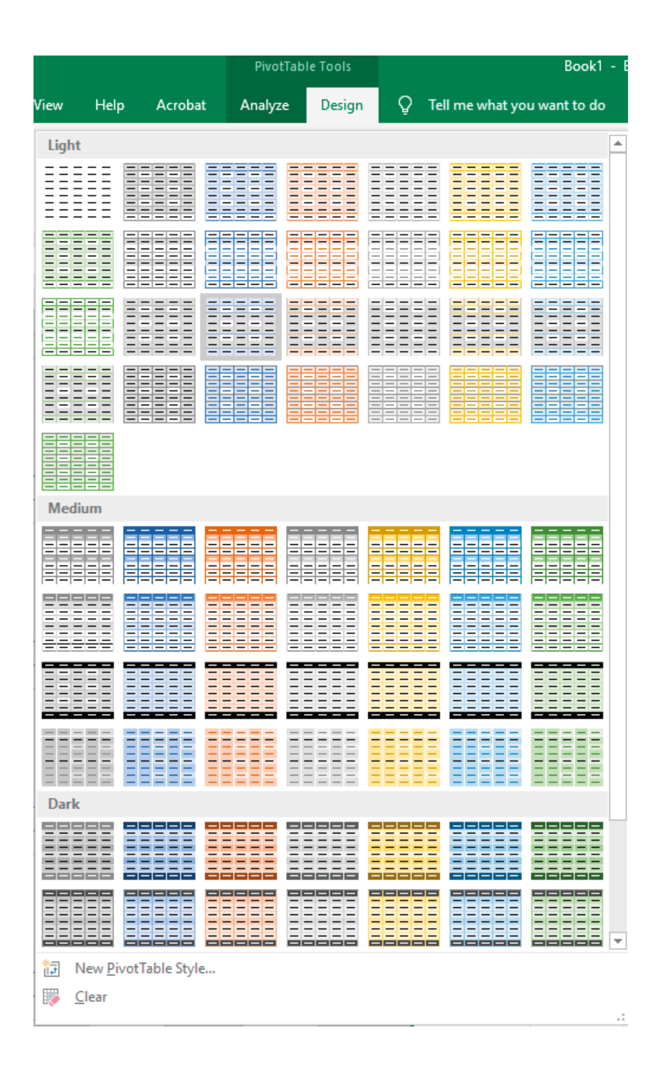


Figure 5.8. Pivot table styles

Although these styles are limited, it is also possible to create new custom styles using the *New Pivot Table Style* option (see Figure 5.9). These self-made styles can be saved as templates. Finally, the *Clear* option is used to remove the styles applied to a pivot table.

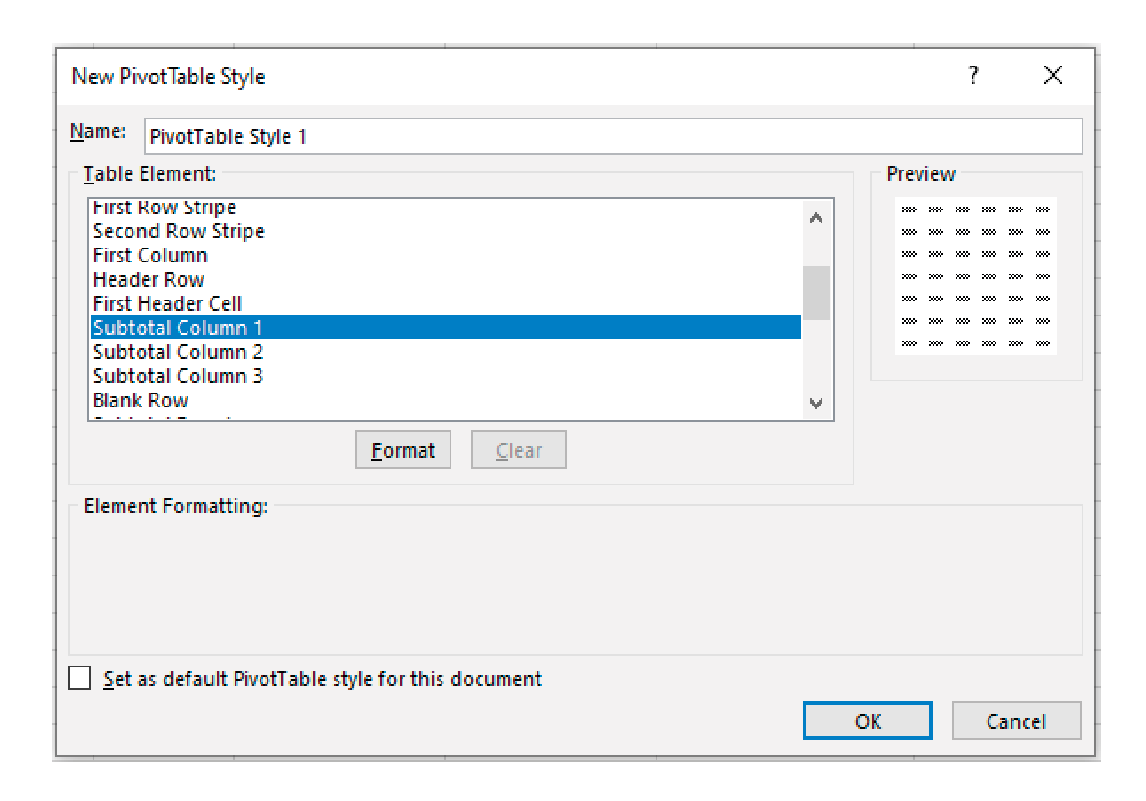


Figure 5.9. Custom Pivot Table Style

Chapter 6: Applying conditional formats

The Home tab can be used to access the *Conditional Formatting* option (see Figure 6.1).

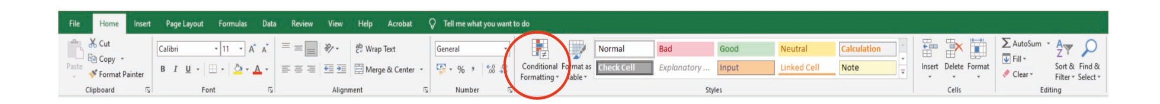


Figure 6.1. *Conditional Formatting*

This option is not exclusive to pivot tables, but is applicable in any other type of tables. However, the combination of conditional formatting functionalities with pivot tables can be very useful.

Dynamic tables are often made up of numerous data, and it may be interesting to determine any changes in them. Using a type of indicator may be useful for this purpose. In some cases, it may be interesting to know how a variable evolves over time, whether it has increased or decreased, or simply how it has evolved in relation to an ideal value.

The example of waste collection will be used for this chapter. We generate a pivot table that summarizes the kilograms of each type of recycled product collected in each quarter (see Table 6.1).

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Table 6.1. Starting pivot table example

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

A comparison of the data shows that the amounts of waste collected during the first quarter are higher than those in the second. However, another view of the table could facilitate analysis of the data (see Table 6.2).

Table 6.2. Pivot table with conditional formatting

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

Colours of varying intensities could also be used to reflect whether or not the quantities meet a certain objective. Let us suppose that the collection of quantities greater than 10,000 kg is considered adequate for each type of product. By contrast, amounts lower than this amount would imply that there is still room for improvement. In Table 6.3 below, a darker colour is associated with when the collected quantities are not acceptable, and a lighter colour with when they are.

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Table 6.3. Pivot table with conditional formatting linked to colour

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

The interpretation of the data could be even more complex if we include more data in our table, as could be the case if we are interested in distinguishing between the amounts collected each month or in different landfills.

In this case, it is advisable to use conditional formats in the pivot table. These formats are very flexible, and provide many possibilities. As a result, only some of them will be explained below.

The *Conditional Formatting* option is on the Home tab, and it is possible to choose from the possibilities shown in Figure 6.2.

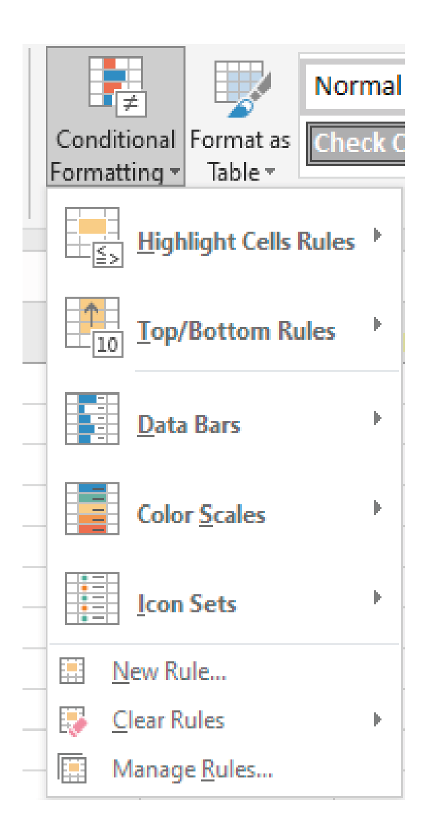


Figure 6.2. Content of the Conditional Formatting option

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6.1. HIGHLIGHT CELLS RULES

Cells rules highlight data in the pivot table that meet a certain condition (see Figure 6.3). For example, if the data are numbers, it is possible to highlight those that are higher or lower than a certain amount. It is also possible to highlight cells that contain specific text or dates.

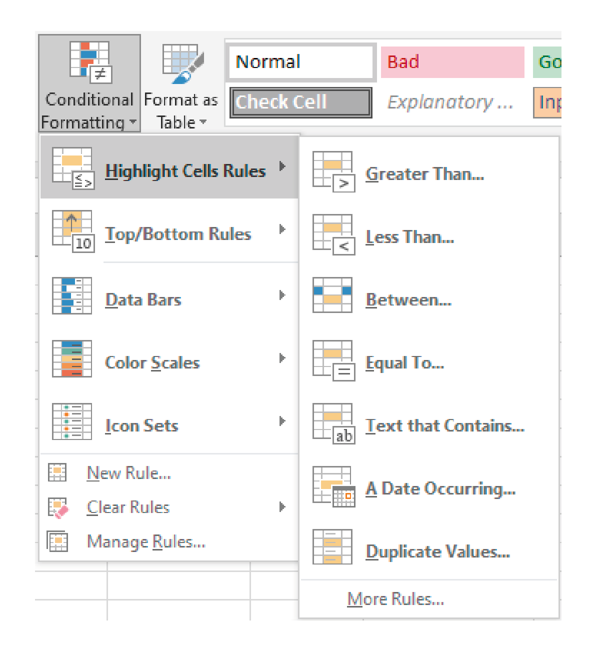


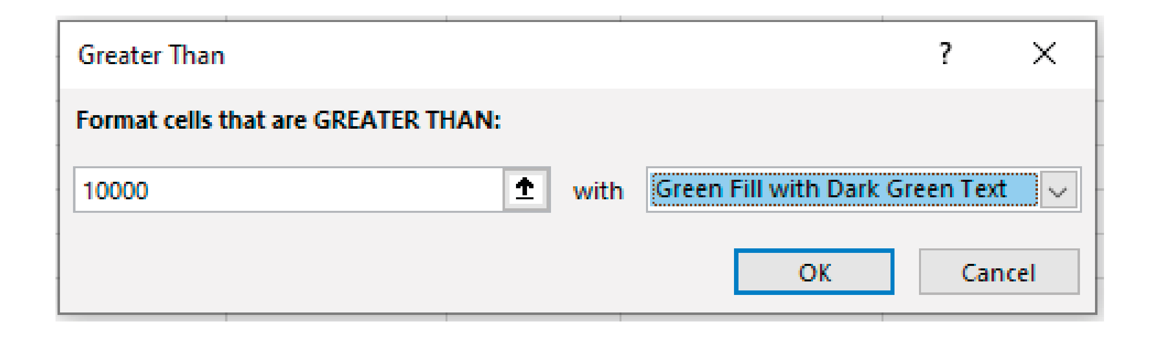
Figure 6.3. Content of Highlight Cells Rules option

Returning to the example of waste collection, suppose that we want to know in which quarter the collection of each product was greater than 10,000 kilos. The first step is to select the data range in which we want to apply conditional formatting.

By following the sequence *Conditional Formatting*, *Highlight Cells Rules*, *Greater than*, a dialog box appears that must be completed with the amount we want to specify (in this case 10,000) (see Figure 6.4). A predetermined format to apply to those cells also appears by default, but it could be changed for other predefined options or even completely customized with a desired format for cells that meet the specified condition.

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The result is shown in Table 6.4 below.

Table 6.4. Result of conditional formatting

Sum of Kilograms	Quarter		
Product	**Quarter 1**	**Quarter 2**	**Grand Total**
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

It is also possible to create new rules using the *Conditional Formatting*, *Highlight Cells Rules*, *More Rules* option for different cell selections (see Figure 6.5).

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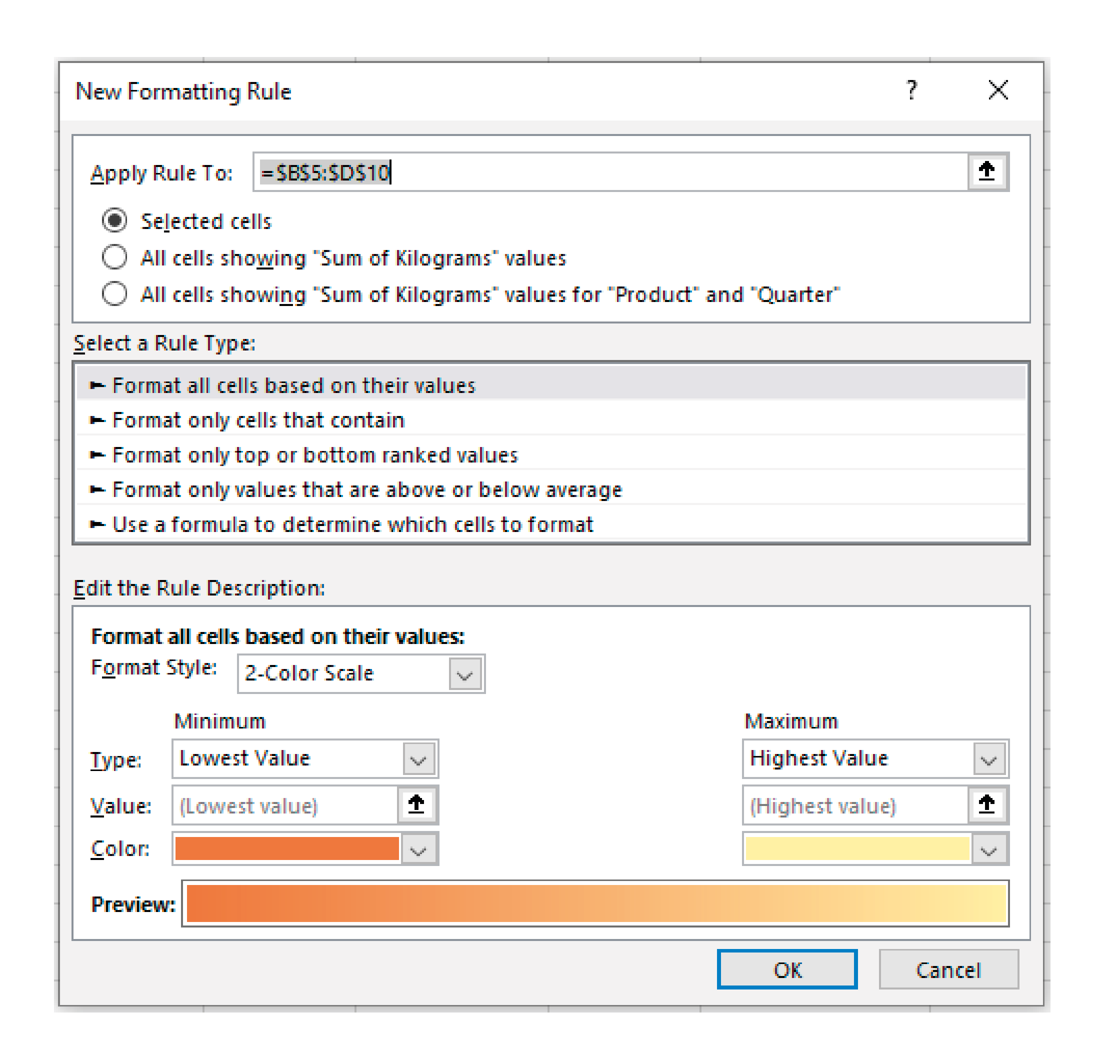


Figure 6.5. New Formatting Rule

Figures 6.6 to 6.12 below present the different *Highlight Cells Rules* options.

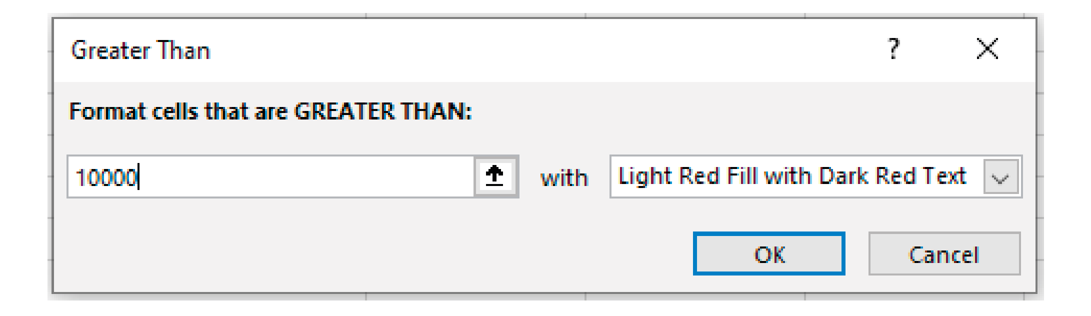


Figure 6.6. Format cells that are Greater than

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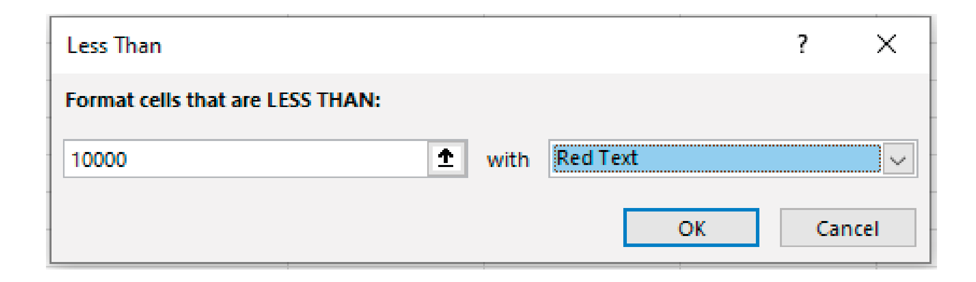


Figure 6.7. Format cells that are Less than

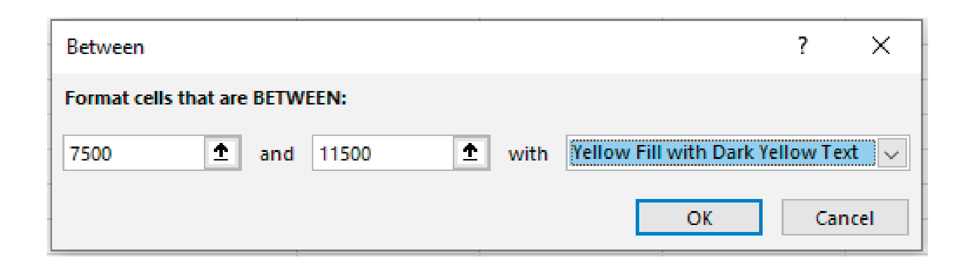


Figure 6.8. Format cells that are Between

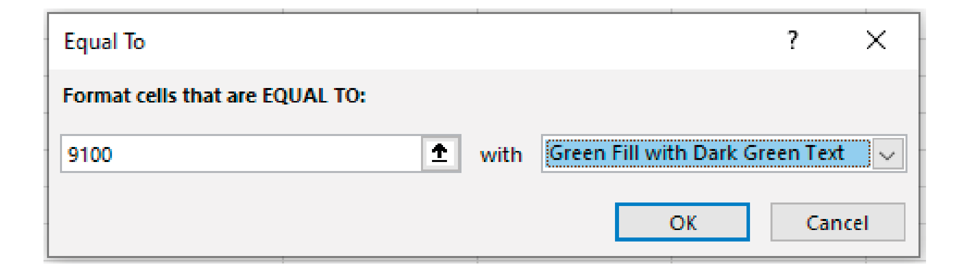


Figure 6.9. Format cells that are Equal to

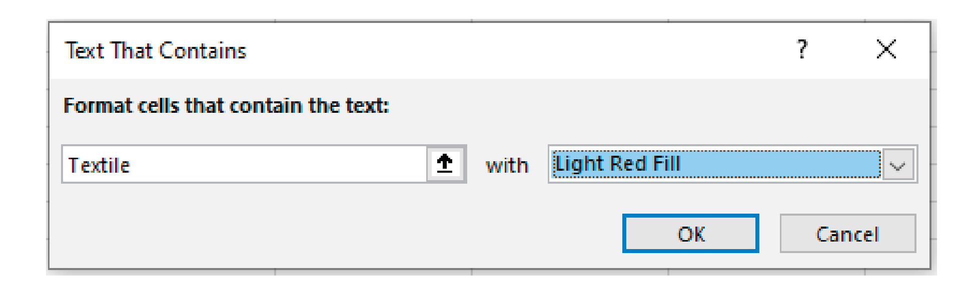


Figure 6.10. Format cells that contain text with a specified string of letters

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This option, as well as the next two, is only available for non-value fields.

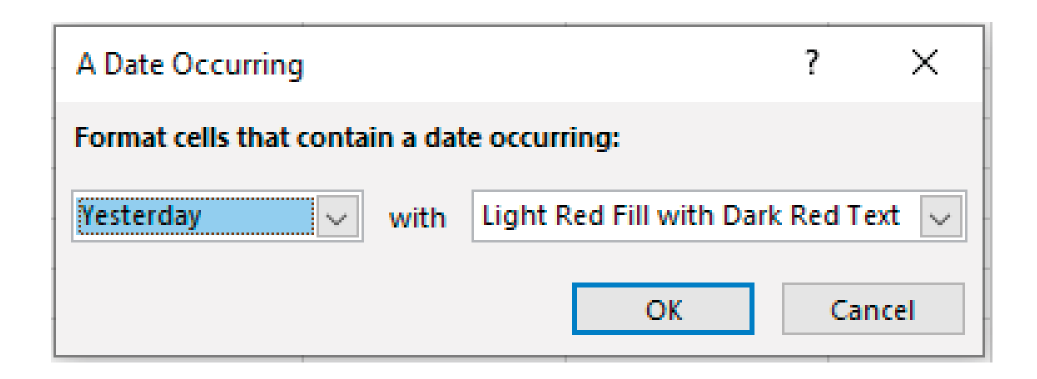


Figure 6.11. Format cells that contain A Date

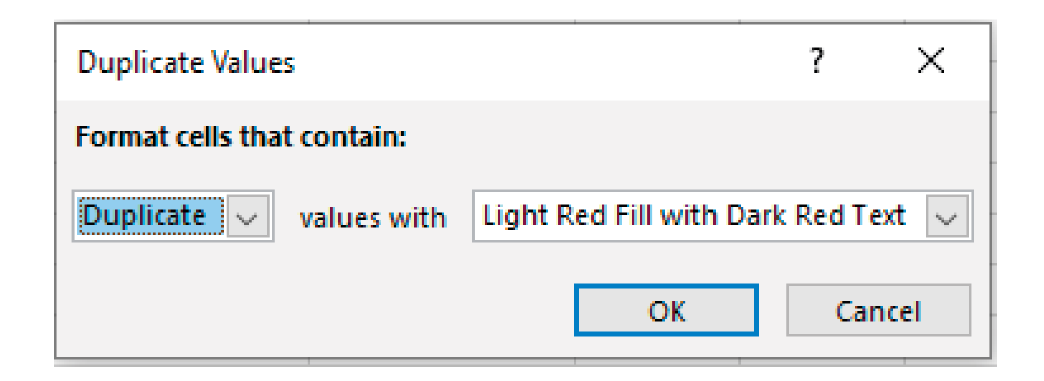


Figure 6.12. Format cells that contain Duplicate Values

6.2. TOP/BOTTOM RULES

This time, suppose that we want to highlight only the highest or lowest values (see Figure 6.13). We must specify exactly how many values we want to highlight, e.g. if we want to apply conditional formatting to the 10 highest values, or to the highest 10%. It might also be useful to highlight the lowest 10 values or the lowest 10%. Another option would be to apply the format to cells that are above or below the average value.

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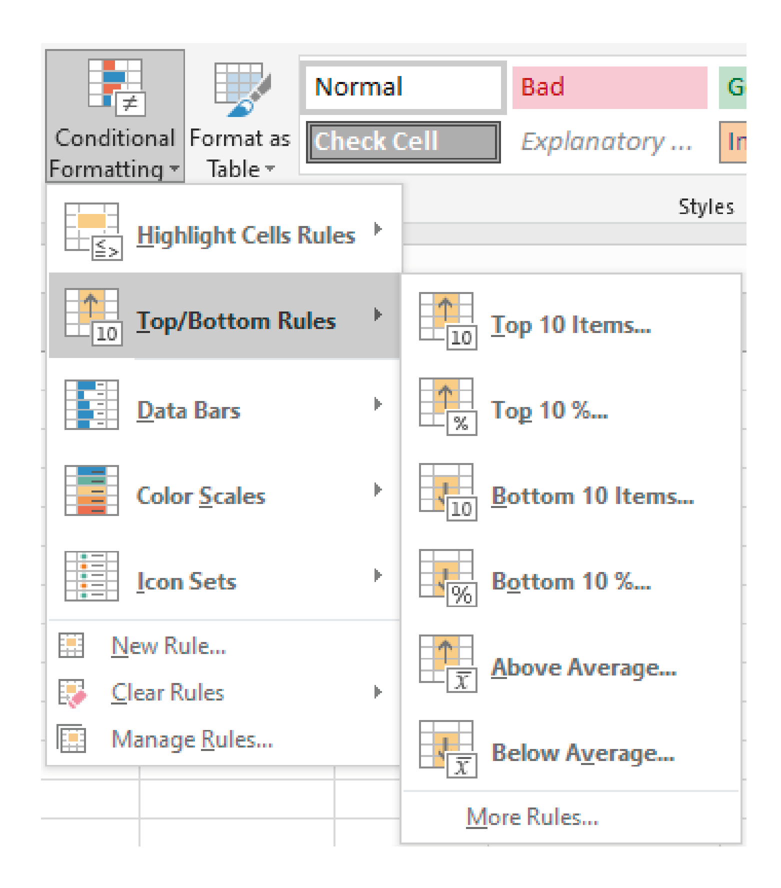


Figure 6.13. Top/Bottom rules

Returning to the table containing the amounts of each type of waste collected in each quarter, the data for each quarter must be selected with the mouse (see Table 6.5).

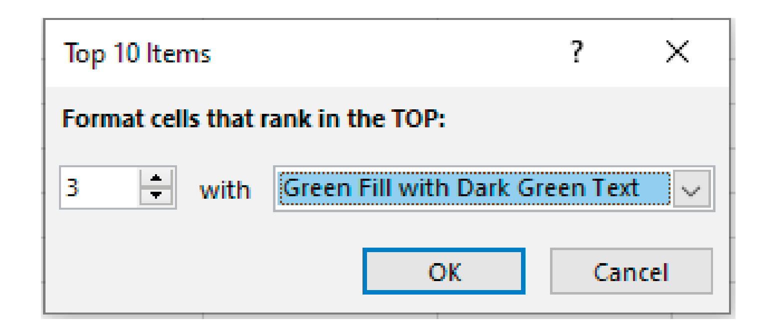
Table 6.5. Selection of the data range to analyze

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	49950	48100	98050

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If we want to highlight the 3 highest values in dark green, the following steps are required: *Conditional Formatting*, *Top/Bottom Rules*, *Top 10 Items*. In the dialog box that appears, 10 must be replaced by 3 (since we only want the three highest values in our selection) (see Figure 6.14).



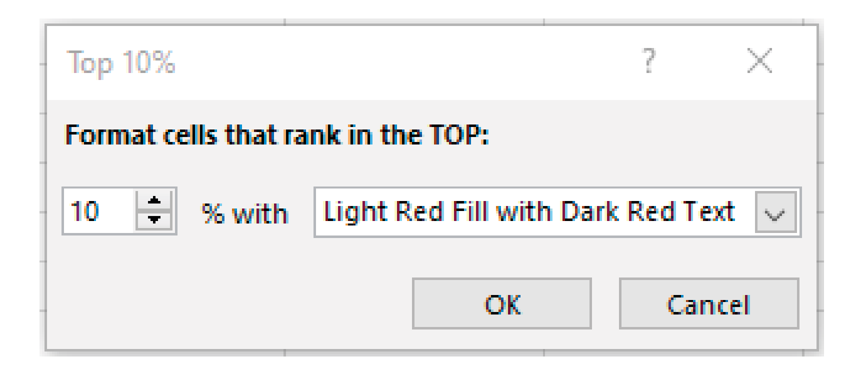
Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

Figure 6.14. Conditional formatting with the 3 highest values

On the other hand, if the “Top 10%” option is chosen and the number 10 is kept in the dialog box, only one value would be highlighted (we have 10 values, so 10% of the best is 1) (see Figure 6.15).

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Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

Figure 6.15. Conditional formatting with the highest 10% of values

6.3. DATA BARS

This option combines the utility of viewing the table with the data and a graph at the same time (see Figure 6.16). This is because a colour bar can be included in each cell with this option. This bar represents the value of the cell, and the width will vary depending on the magnitude of the value contained in each cell. It is also possible to choose between a solid or gradient fill for the bars.

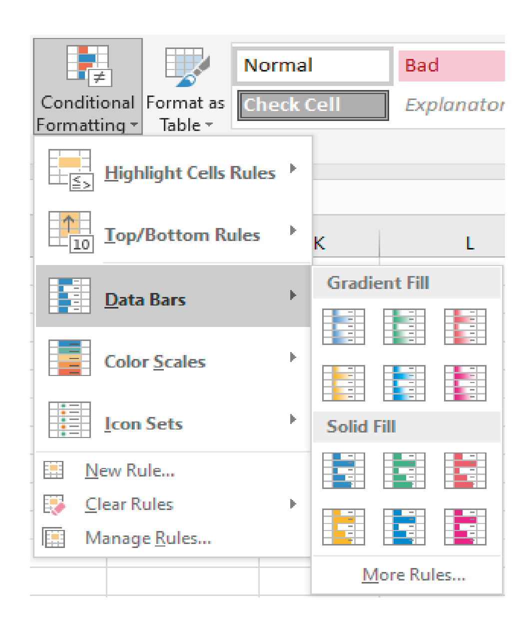


Figure 6.16. Data Bars

For example, in order to generate data bars in green in our example (see Table 6.6-6.7), we need to select the data, follow the instruction *Conditional Formatting*, *Data Bars* and finally, select the colour we want to use, as well as whether it is weathered or solid.

Table 6.6. Starting pivot table example

Sum of Kilograms	**Quarter**		
Product	**Quarter 1**	**Quarter 2**	**Grand Total**
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

Table 6.7. Pivot table result with Data Bars

Sum of Kilograms	**Quarter**		
Product	**Quarter 1**	**Quarter 2**	**Grand Total**
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

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These data bars are also very useful for highlighting the differences between actual and forecast quantities (see Table 6.8). For example, in the case of a blood bank, which works with various hospitals in the Valencian Community (see starting example in Annex II), it would be useful to know the difference between the actual blood reserve and the planned reserve, based on the liters of blood collected in each of those hospitals. Table 6.8 shows these differences between quantities in two colours, while the length of the colour bar indicates how significant this difference is.

Table 6.8. Example differences between actual and forecast quantities with Data Bars

Row Labels	Sum of Actual reserve (actual number of blood donors)	Sum of Planned reserve (number of blood donors planned)	Sum of Difference (Actual reserve-Planned reserve)
⊟Alicante	**6475**	**6470**	**5**
⊟Alicante	**1651**	**1620**	**31**
Hospital General de Alicante	962	905	57
Hospital San Juan de Alicante	689	715	-26
⊟Denia	**1096**	**1055**	**41**
Hospital Dénia	1096	1055	41
⊟Elche	**1145**	**1195**	**-50**
Hospital General Universitario de Elche	1145	1195	-50
⊟Orihuela	**741**	**780**	**-39**
Hospital Vega Baja de Orihuela "Vega Baja"	741	780	-39
⊟San Vicente del Raspeig	**887**	**865**	**22**
Hospital San Vicente del Raspeig	887	865	22
⊟Torrevieja	**955**	**955**	**0**
Hospital Torrevieja	955	955	0
⊟Castellón	**3992**	**3994**	**-2**
⊟Castellón	**2599**	**2579**	**20**
Centro 9 de Octubre	503	540	-37
Hospital General	985	949	36
Hospital Provincial	1111	1090	21
⊟Vilareal	**758**	**780**	**-22**
Hospital La Plana	758	780	-22
⊟Vinaroz	**635**	**635**	**0**
Hospital Comarcal de Vinaròs	635	635	0
⊟Valencia	**6270**	**6150**	**120**
⊟Alcira	**712**	**695**	**17**
Hospital La Ribera de Alzira	712	695	17
⊟Játiva	**548**	**525**	**23**
Hospital Xàtiva "Lluís Alcanyís"	548	525	23
⊟Onteniente	**645**	**680**	**-35**
Hospital General d'Ontinyent	645	680	-35
⊟Requena	**431**	**435**	**-4**
Hospital Requena	431	435	-4
⊟Sagunto	**879**	**845**	**34**
Hospital Sagunto	879	845	34
⊟Valencia	**3055**	**2970**	**85**
Hospital Clínico Universitario	1046	1125	-79
Hospital La Malvarrosa	727	650	77
Hospital Universitario La Fe	1282	1195	87
Grand Total	**16737**	**16614**	**123**

The *More rules* option is also present, which means that more filtering options can be applied according to the chosen format rule (see Figure 6.17).

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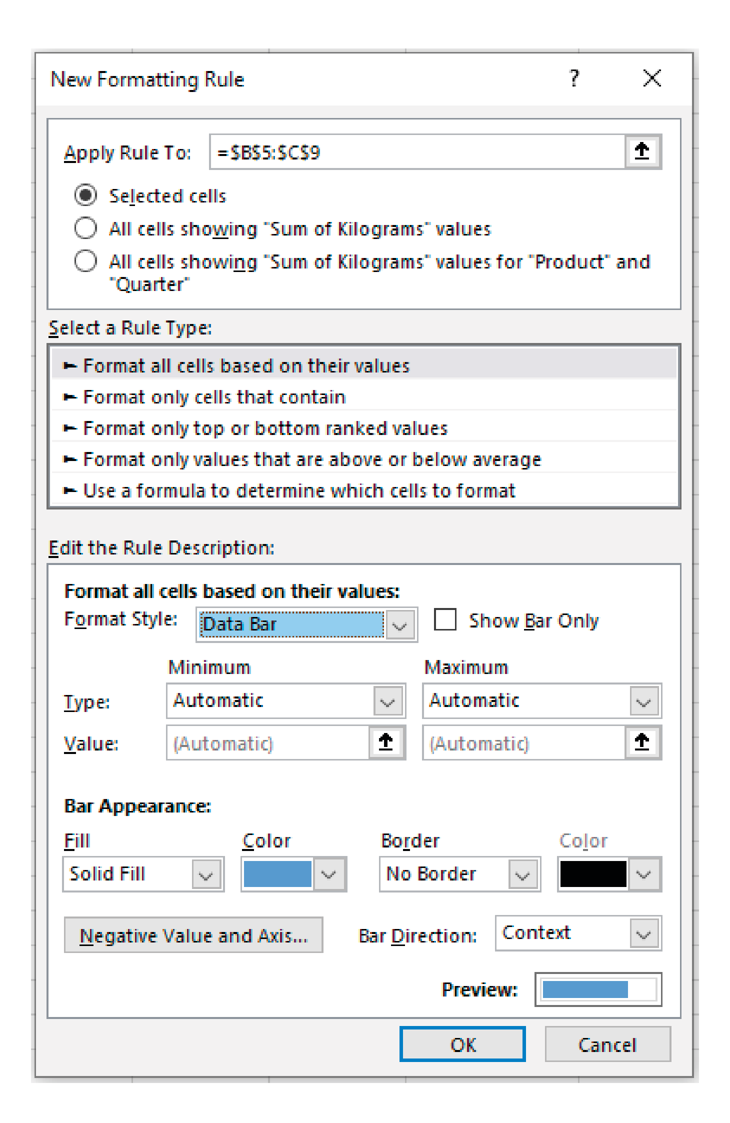


Figure 6.17. New Formatting Rule

6.4. COLOUR SCALES

The *Colour Scales* option allows different shades of a colour to be used in a range of cells (see Figure 6.18). The greater or lesser intensity of the colour shows whether the data is higher or lower (see example in Table 6.9).

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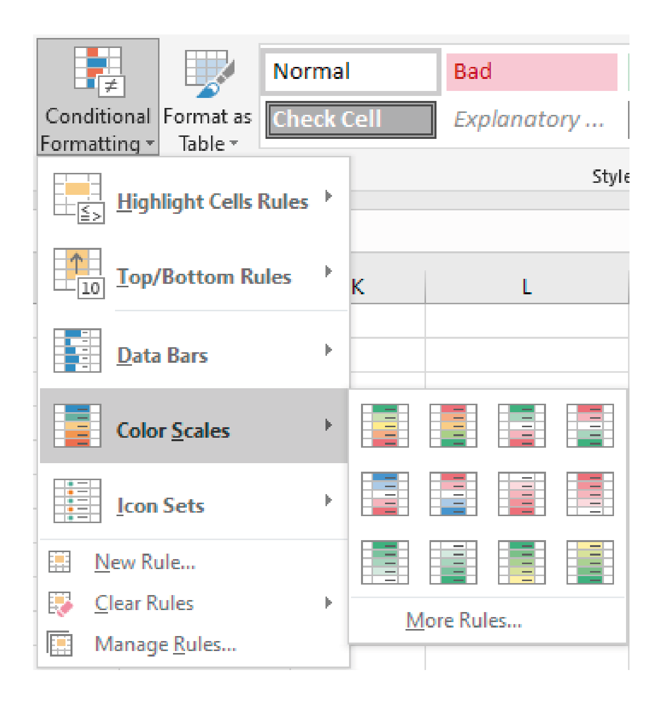


Figure 6.18. Colour Scales menu

Table 6.9. Example of a colour scale applying a single colour

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

It is also possible to use several colours with different intensities. For example, the highest values can be displayed by default in green and the lowest in yellow. Different intensities are also used inside the cells shown in green, so that the highest values appear in a darker green. The same applies to the cells in yellow (see Table 6.10).

Table 6.10. Example of a colour scale applying two colours

Sum of Kilograms	Quarter		
Product	Quarter 1	Quarter 2	Grand Total
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

As in other previous options, other rules can also be defined (see Figure 6.19).

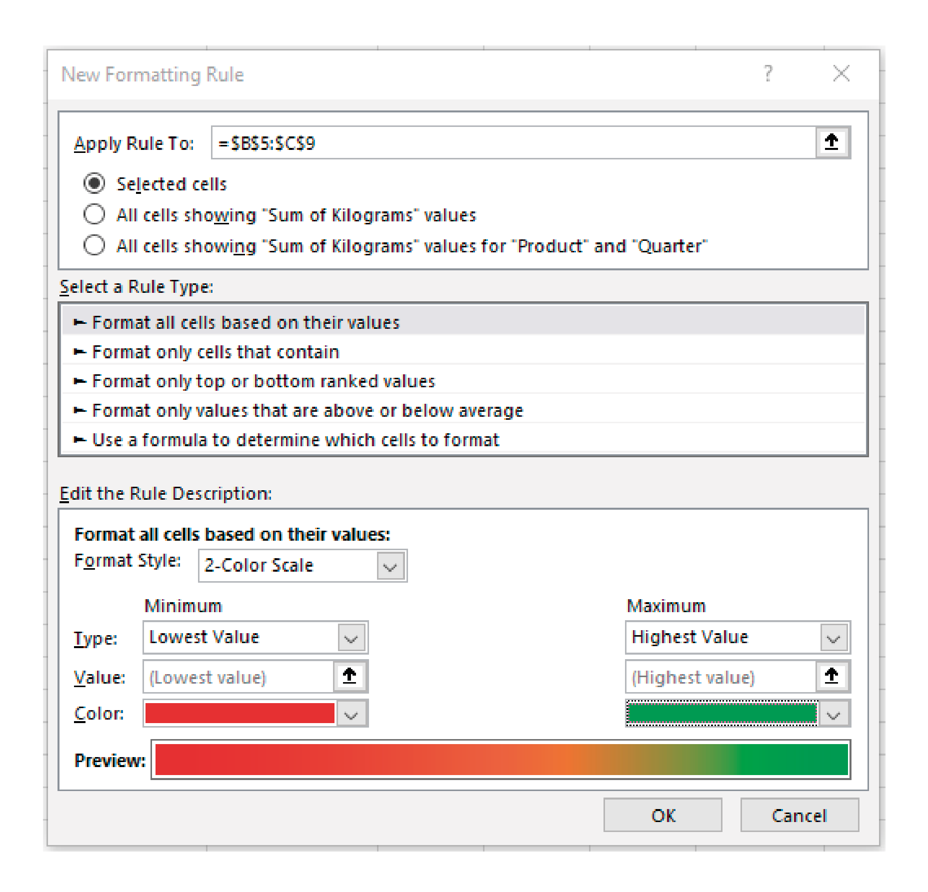


Figure 6.19. More formatting rules

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6.5. ICON SETS

This option can be used to add an icon in each cell, which represents its value (see Figure 6.20).

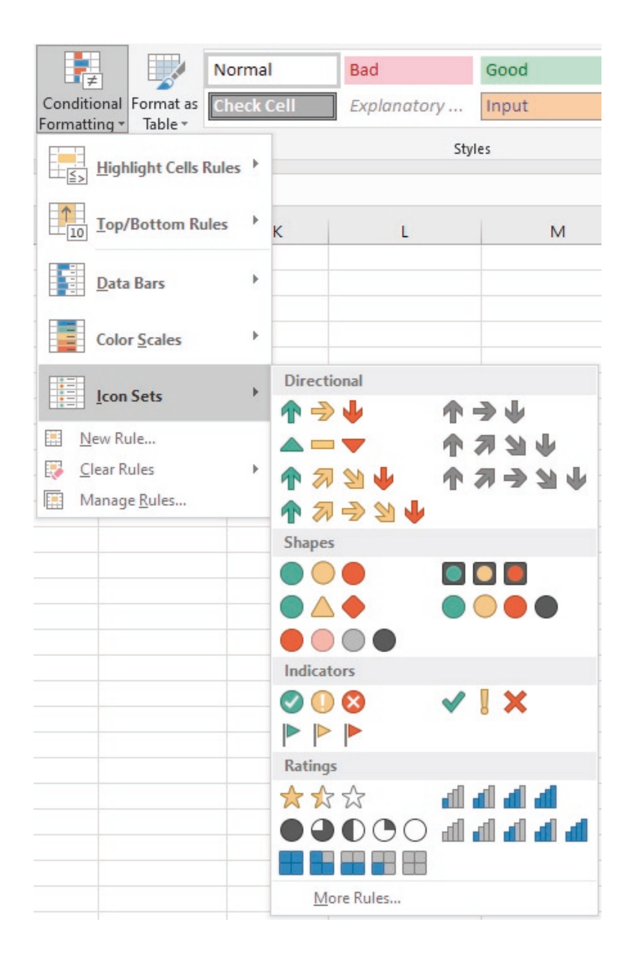


Figure 6.20. Icon Sets

For example, coloured flags have been used in Table 6.10 below.

Table 6.10. Icon Sets example

Sum of Kilograms	**Quarter**		
Product	**Quarter 1**	**Quarter 2**	**Grand Total**
Glass	12200	12150	24350
Metal	9100	8800	17900
Paper and cardboard	13350	12700	26050
Plastic	9400	8700	18100
Textile	5900	5750	11650
Grand Total	**49950**	**48100**	**98050**

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A green flag appears in the highest values, red in the lowest values and yellow in intermediate values.

It is also possible to apply the icons when illustrating the differences calculated between the real blood reserves and the anticipated values in the example of the blood bank mentioned above (see Annex II), thereby facilitating presentation of the results (see Table 6.11).

Table 6.11. Example difference between actual and forecast reserves

Row Labels	Sum of Actual reserve (actual number of blood donors)	Sum of Planned reserve (number of blood donors planned)	Sum of Difference (Actual reserve-Planne
Alicante	**6475**	**6470**	
Alicante	**1651**	**1620**	
Hospital General de Alicante	962	905	
Hospital San Juan de Alicante	689	715	
Denia	**1096**	**1055**	
Hospital Dénia	1096	1055	
Elche	**1145**	**1195**	
Hospital General Universitario de Elche	1145	1195	
Orihuela	**741**	**780**	
Hospital Vega Baja de Orihuela "Vega Baja"	741	780	
San Vicente del Raspeig	**887**	**865**	
Hospital San Vicente del Raspeig	887	865	
Torrevieja	**955**	**955**	
Hospital Torrevieja	955	955	
Castellón	**3992**	**3994**	
Castellón	**2599**	**2579**	
Centro 9 de Octubre	503	540	
Hospital General	985	949	
Hospital Provincial	1111	1090	
Vilareal	**758**	**780**	
Hospital La Plana	758	780	
Vinaroz	**635**	**635**	
Hospital Comarcal de Vinaròs	635	635	
Valencia	**6270**	**6150**	
Alcira	**712**	**695**	
Hospital La Ribera de Alzira	712	695	
Játiva	**548**	**525**	
Hospital Xàtiva "Lluís Alcanyís"	548	525	
Onteniente	**645**	**680**	
Hospital General d'Ontinyent	645	680	
Requena	**431**	**435**	
Hospital Requena	431	435	
Sagunto	**879**	**845**	
Hospital Sagunto	879	845	
Valencia	**3055**	**2970**	
Hospital Clínico Universitario	1046	1125	

As in the previous sections, new custom rules can be defined to illustrate the icons (see Figure 6.21).

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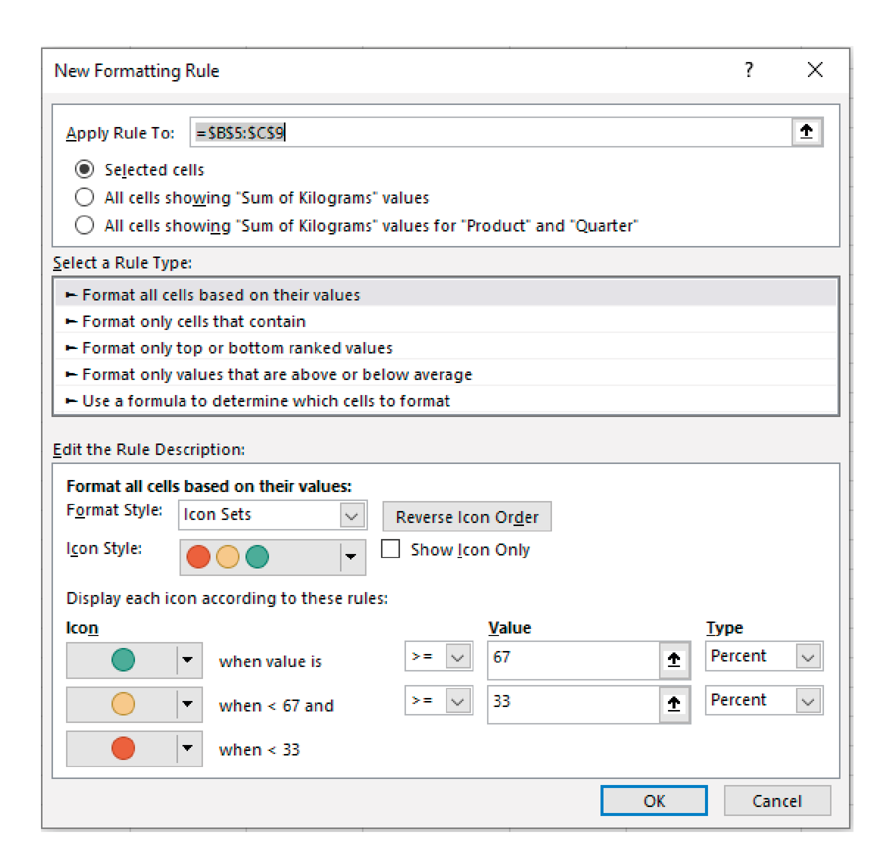


Figure 6.21. Options in More Rules

However, there are some precautions that must be followed when using the conditional formatting option, as otherwise the results could be misinterpreted. For example, if a selection is not deleted before applying another section, the different formats will overlap and the result will not be the one desired.

6.6. NEW RULE

As discussed above, there are numerous options for applying conditional formatting to a set of cells. In addition to the predefined options that have been explained, it is possible to specify the design of custom conditional formats.

In this section, we will continue to use the example of waste collection, but now we will distinguish between the amounts collected for each type of product and month, as shown in the example in Table 6.12.

Contents

Table 6.12. Starting pivot table example

Sum of Kilograms	Month						
Product	**1**	**2**	**3**	**4**	**5**	**6**	**Grand Total**
Glass	4200	4500	3500	6300	3700	2150	24350
Metal	3400	2600	3100	5100	2100	1600	17900
Paper and cardboard	4300	4550	4500	6450	3750	2500	26050
Plastic	3000	3200	3200	4500	2600	1600	18100
Textile	2100	1600	2200	3150	1500	1100	11650
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

Next, we execute *Conditional Formatting*, *New Rule* and a dialog box like the one shown in Figure 6.22 appears.

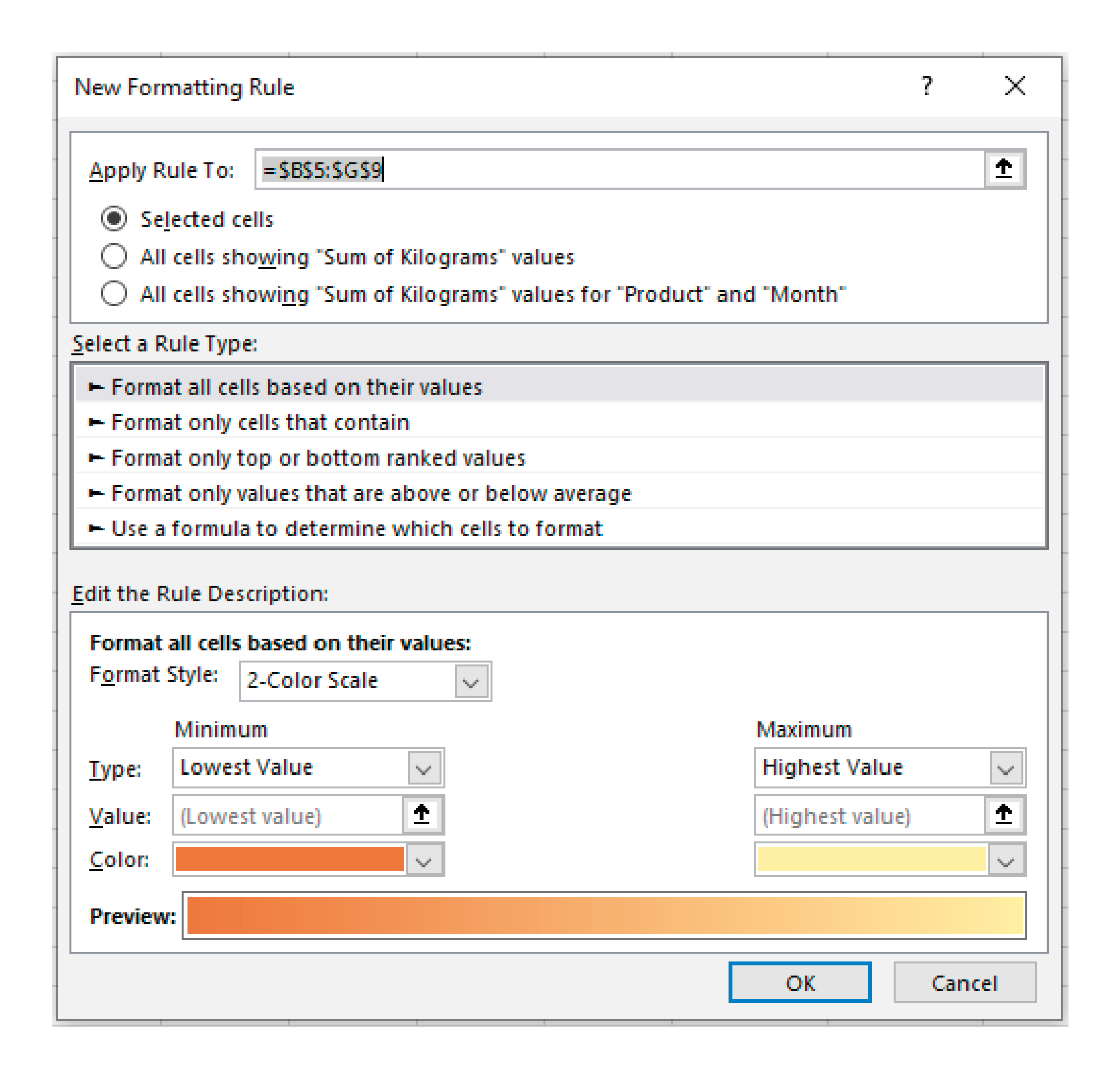


Figure 6.22 New formatting rule

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This dialog box is divided into three blocks. In the first, the cell or cells in which the rule is to be applied must be specified. In the second, the rule type to be applied must be selected. Finally, the third block is used to define the format to be applied. Let us take a closer look at these options.

First, the new rule can be applied to the selected cells, those that show the total kilos, or as a last option, the cells that contain the sum of kilos for each Product and Month. This example uses the third possibility. Once this has been done, a rule type must be selected. We select *Format all cells based on their values*.

Finally, the desired format for the cell will be specified. There are four options: *2-Color Scale*, *3-Color Scale*, *Data Bars*, or *Icon Sets*. In our example, we select the *Icon Sets* option as the format style, and then the *3 triangles* option as the style.

For each icon (red triangle, yellow bar and green triangle), you can specify different cut points. Newer versions of Excel allow the icon style to be customized for each range of values.

In addition, selecting the icons using their Figures (instead of text) makes work easier than in previous versions of Excel.

Finally, once you have chosen the desired icon for each data range, you only need specify the values that you want to associate with each icon, e.g. green for values greater than 4,000 kg per month and red for values less than 2,000 kg per month (see Figure 6.23).

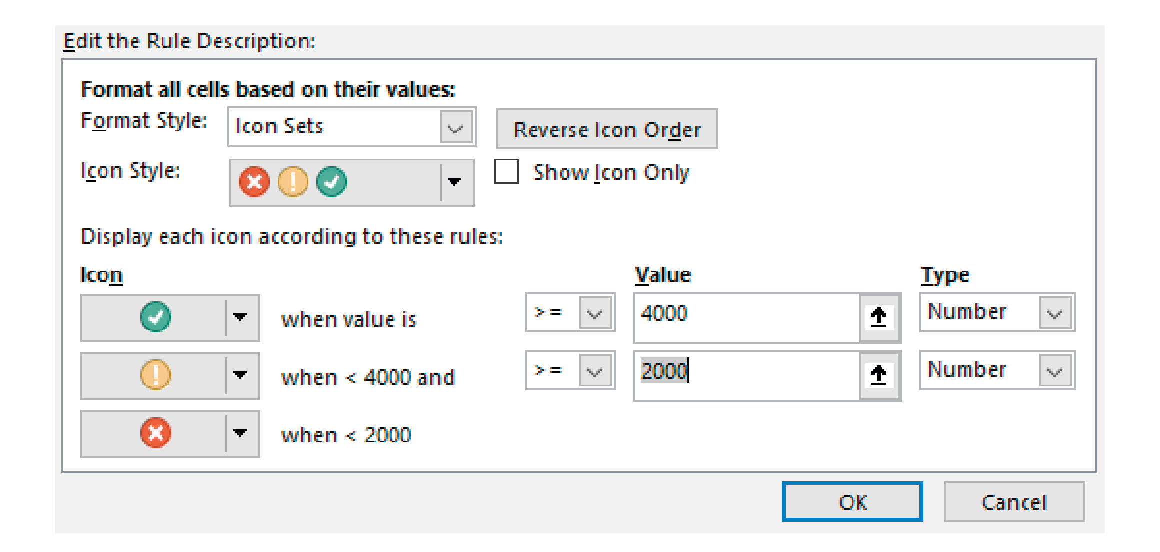


Figure 6.23. Format rule application example

The type of unit and the values that you want to appear in a specific format have therefore been selected. The result is presented in Table 6.13.

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Table 6.13. Result of applying the format rule

Sum of Kilograms	Month						
Product	1	2	3	4	5	6	Grand Total
Glass	4200	4500	3500	6300	3700	2150	24350
Metal	3400	2600	3100	5100	2100	1600	17900
Paper and cardboard	4300	4550	4500	6450	3750	2500	26050
Plastic	3000	3200	3200	4500	2600	1600	18100
Textile	2100	1600	2200	3150	1500	1100	11650
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

There is another interesting option, called *Invert Icon Sort Order*. You can use it reverse the order of the selected icons. Another interesting feature or option is *Show Icon Only*, which shows only the icons that do not have values in the table. The result of applying this option would be the following (Table 6.14).

Table 6.14. Example when applying the *Show Icon Only option*

Sum of Kilograms	Month						
Product	1	2	3	4	5	6	Grand Total
Glass							24350
Metal							17900
Paper and cardboard							26050
Plastic							18100
Textile							11650
Grand Total	**17000**	**16450**	**16500**	**25500**	**13650**	**8950**	**98050**

As seen above, there are multiple possibilities and combinations for applying conditional formatting to the data in a table. After this brief introduction to the options, each user should explore other possibilities depending on their needs of.

6.7. CLEAR RULES

Sometimes it may be useful to remove the rules that have been created to apply conditional formats to pivot tables. This can be achieved with the *Clear Rules* option, which offers various options as shown in Figure 6.24 below.

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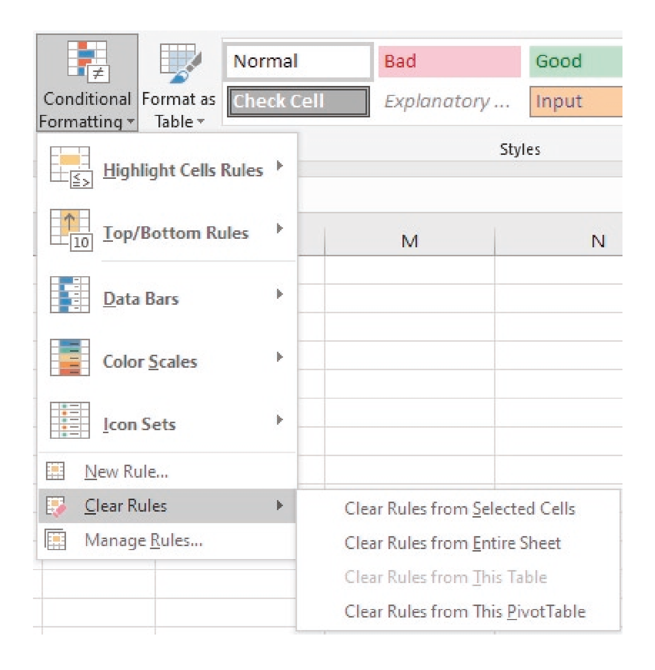


Figure 6.24. Options in Clear Rules

It is possible to choose between:

- Clearing the rules from a previously selected set or range of cells.
- Clearing the rules from the entire spreadsheet you are working on.
- Clearing rules from this table is applicable when using data in Excel table format, but not linked to a pivot table.
- Clearing rules from this pivot table is an option that allows you to delete the rules of the pivot table in which you have selected one or more cells.

6.8. CONDITIONAL FORMATTING RULES MANAGER

Conditional Formatting Rules Manager is used to change, create or delete rules created in a selected table or in others (see Figure 6.25).

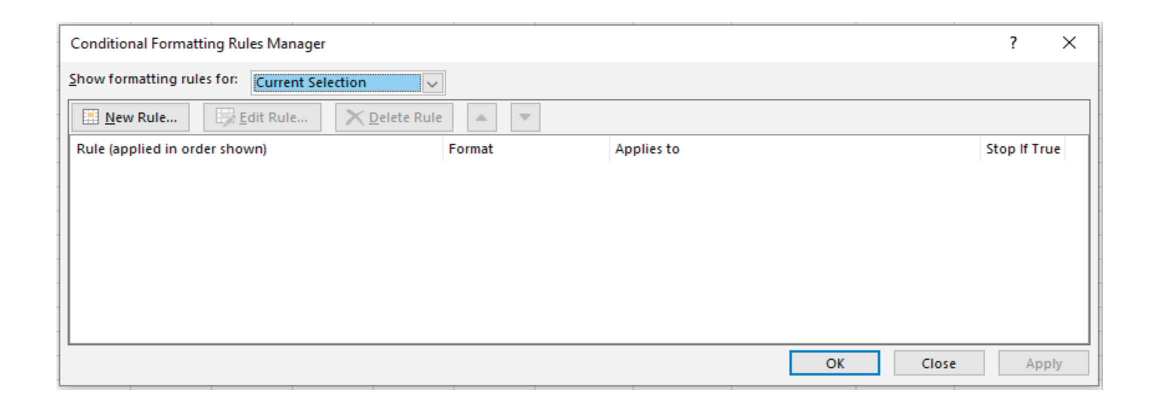


Figure 6.25. Conditional Formatting Rules Manager

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Figures 6.26-6.27 below show the different options that will be obtained.

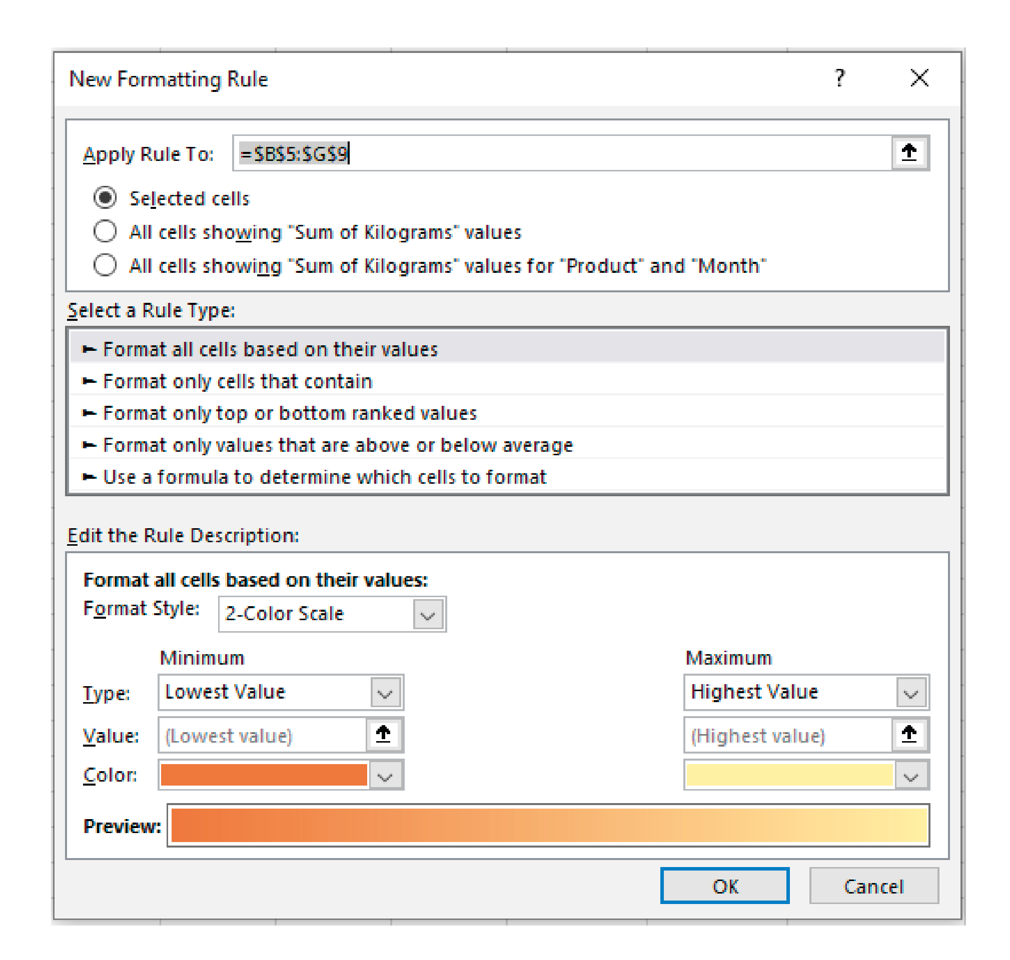


Figure 6.26. Create rules using New Formatting Rule

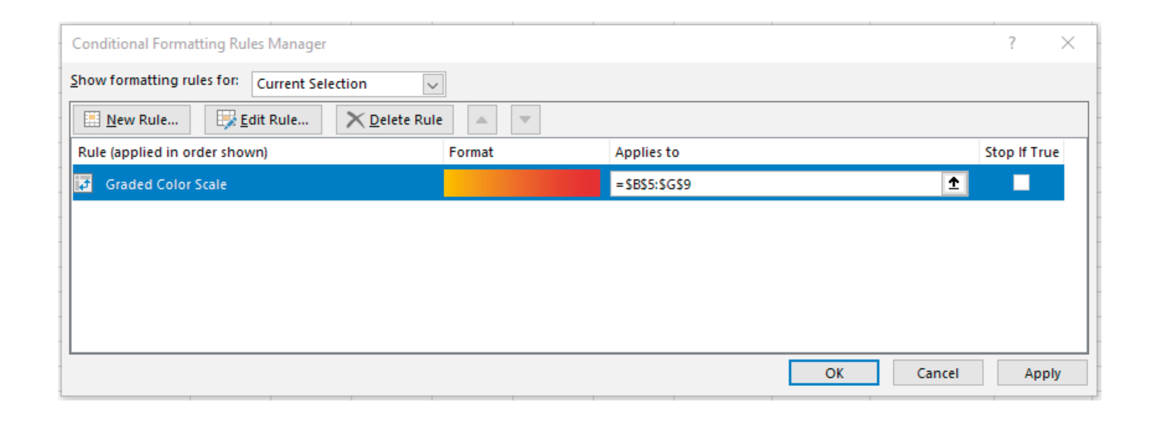


Figure 6.27. Delete rules using Delete Rule

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Chapter 7: Creating and designing charts with pivot tables: practical examples

As explained above, the layout and data that is displayed in a pivot table ca be changed. Pivot chart reports can also be created. Their main characteristic is their flexibility, since they also enable different designs and options to be used to present data.

For each pivot chart report, there is a pivot table report that uses the corresponding layout. The two reports share some fields, and when a change is made to the position of the fields in one of the reports, the same field in the other report is also modified.

7.1. ALTERNATIVES TO CREATING A PIVOT CHART

Continuing with the example of recycling product dumps, two different ways of creating a pivot chart are explained below (see Figure 7.1).

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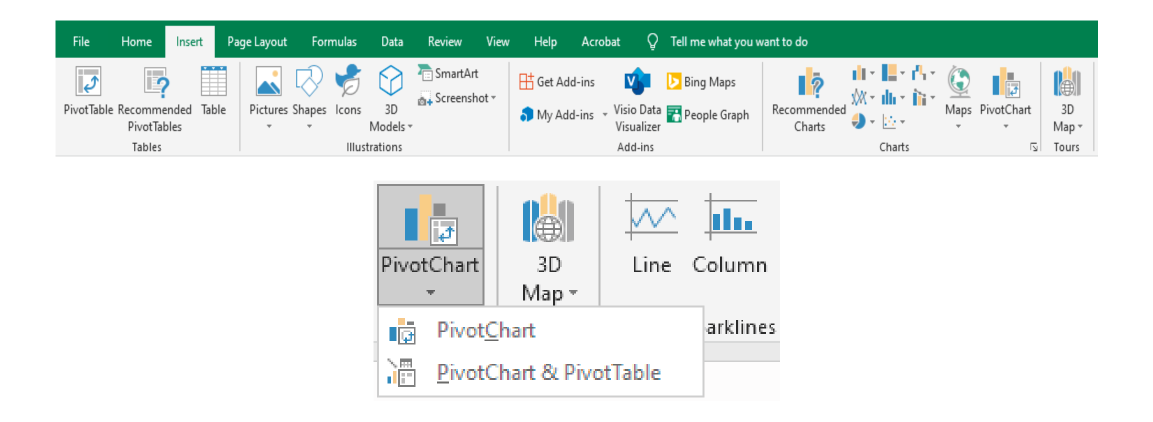


Figure 7.1. Pivot chart creation options

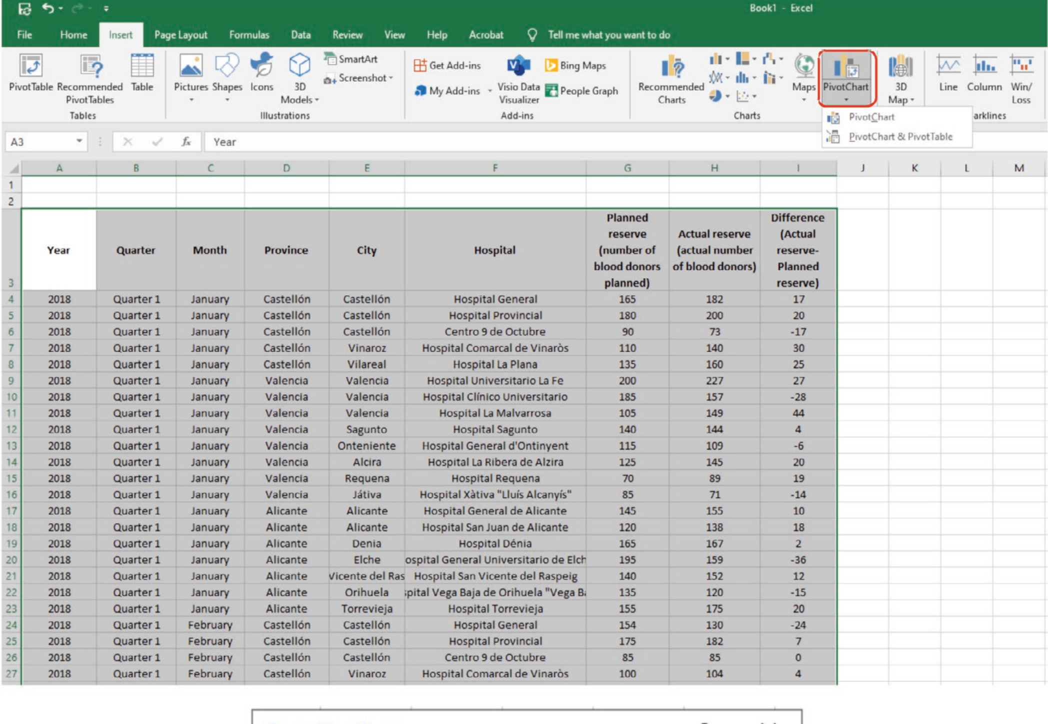
7.1.1. Creating a Pivot Chart via the Insert, Pivot chart option

This option is used when the pivot table has not yet been created. It will be based on the data table shown below (see Annex II).

Table 7.1. Baseline data for creating a pivot chart

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	January	Castellón	Castellón	Hospital General	165	182	17
2018	Quarter 1	January	Castellón	Castellón	Hospital Provincial	180	200	20
2018	Quarter 1	January	Castellón	Castellón	Centro 9 de Octubre	90	73	-17
2018	Quarter 1	January	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	110	140	30
2018	Quarter 1	January	Castellón	Vilareal	Hospital La Plana	135	160	25
2018	Quarter 1	January	Valencia	Valencia	Hospital Universitario La Fe	200	227	27
2018	Quarter 1	January	Valencia	Valencia	Hospital Clínico Universitario	185	157	-28
2018	Quarter 1	January	Valencia	Valencia	Hospital La Malvarrosa	105	149	44
2018	Quarter 1	January	Valencia	Sagunto	Hospital Sagunto	140	144	4
2018	Quarter 1	January	Valencia	Onteniente	Hospital General d'Ontinyent	115	109	-6
2018	Quarter 1	January	Valencia	Alcira	Hospital La Ribera de Alzira	125	145	20
2018	Quarter 1	January	Valencia	Requena	Hospital Requena	70	89	19
2018	Quarter 1	January	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	85	71	-14
2018	Quarter 1	January	Alicante	Alicante	Hospital General de Alicante	145	155	10
2018	Quarter 1	January	Alicante	Alicante	Hospital San Juan de Alicante	120	138	18
2018	Quarter 1	January	Alicante	Denia	Hospital Dénia	165	167	2

To make the chart with Excel 2019, select *Insert, Pivot Chart* (see Figure 7.2). Now click again on the *Pivot Chart* option, and a dialog box will appear in which you have to specify the table or data range. If you had an active cell in the data table, this space would appear filled. If not, it would appear blank.



Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve- Planned reserve)
2018	Quarter 1	January	Castellón	Castellón	Hospital General	165	182	17
2018	Quarter 1	January	Castellón	Castellón	Hospital Provincial	180	200	20
2018	Quarter 1	January	Castellón	Castellón	Centro 9 de Octubre	90	73	-17
2018	Quarter 1	January	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	110	140	30
2018	Quarter 1	January	Castellón	Vilareal	Hospital La Plana	135	160	25
2018	Quarter 1	January	Valencia	Valencia	Hospital Universitario La Fe	200	227	27
2018	Quarter 1	January	Valencia	Valencia	Hospital Clínico Universitario	185	157	-28
2018	Quarter 1	January	Valencia	Valencia	Hospital La Malvarrosa	105	149	44
2018	Quarter 1	January	Valencia	Sagunto	Hospital Sagunto	140	144	4
2018	Quarter 1	January	Valencia	Onteniente	Hospital General d'Ontinyent	115	109	-6
2018	Quarter 1	January	Valencia	Alcira	Hospital La Ribera de Alzira	125	145	20
2018	Quarter 1	January	Valencia	Requena	Hospital Requena	70	89	19
2018	Quarter 1	January	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	85	71	-14
2018	Quarter 1	January	Alicante	Alicante	Hospital General de Alicante	145	155	10
2018	Quarter 1	January	Alicante	Alicante	Hospital San Juan de Alicante	120	138	18
2018	Quarter 1	January	Alicante	Denia	Hospital Dénia	165	167	2
2018	Quarter 1	January	Alicante	Elche	ospital General Universitario de Elch	195	159	-36
2018	Quarter 1	January	Alicante	Vicente del Ras	Hospital San Vicente del Raspeig	140	152	12
2018	Quarter 1	January	Alicante	Orihuela	spital Vega Baja de Orihuela "Vega B	135	120	-15
2018	Quarter 1	January	Alicante	Torrevieja	Hospital Torrevieja	155	175	20
2018	Quarter 1	February	Castellón	Castellón	Hospital General	154	130	-24
2018	Quarter 1	February	Castellón	Castellón	Hospital Provincial	175	182	7
2018	Quarter 1	February	Castellón	Castellón	Centro 9 de Octubre	85	85	0
2018	Quarter 1	February	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	100	104	4

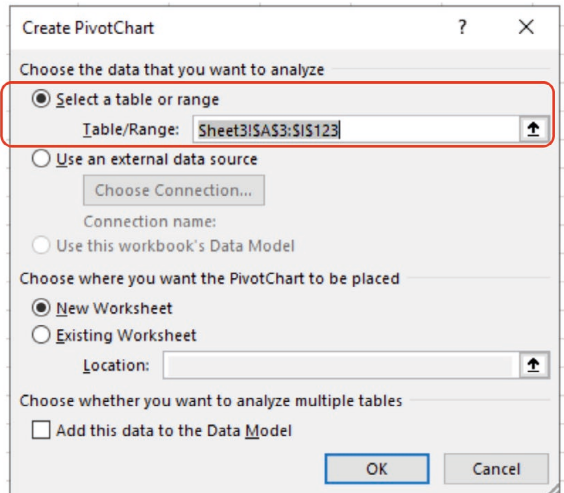


Figure 7.2. Selecting and creating the pivot chart

After specifying the range of cells to be included in the chart, clicking *OK* will create the pivot chart. The result is shown in Figure 7.3. As above, the fact that the pivot table fields are related to those in the chart must be taken into account. The filters and selections in the graph are therefore those in the table, and vice versa.

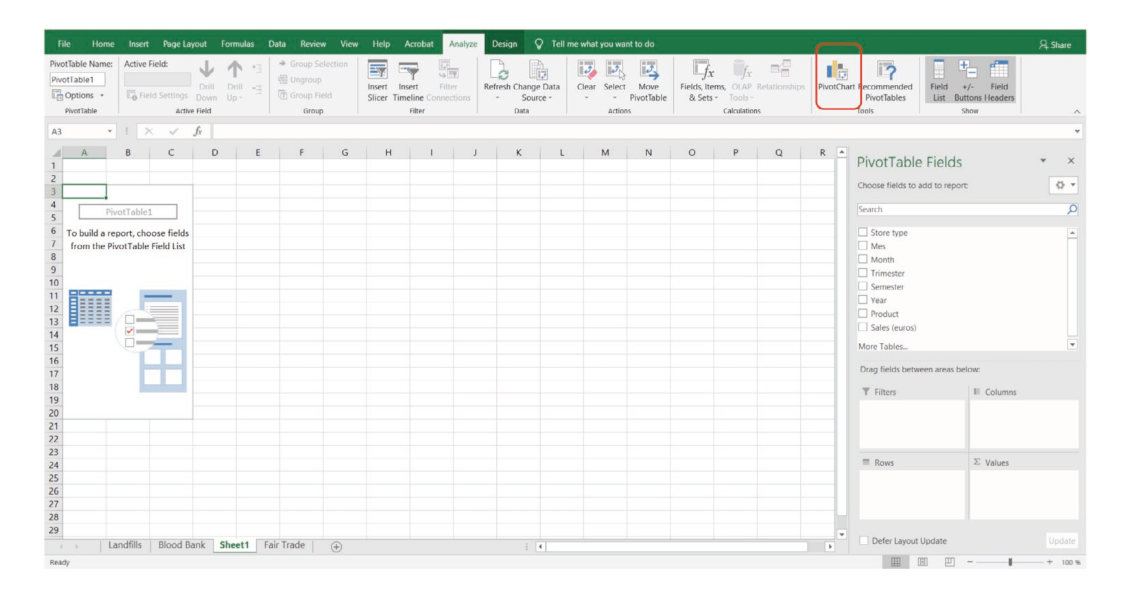
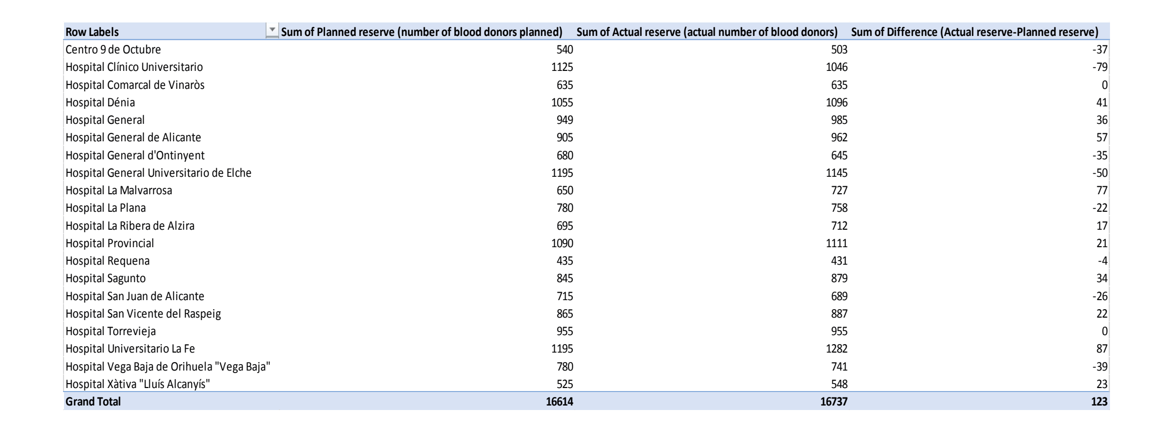


Figure 7.3. Creating a pivot chart

7.1.2 Creating a Pivot Chart using the Analyze, Pivot Chart option

This option is valid when a pivot table has already been defined. To generate the chart, first select one of the table cells (see Table 7.2).

Table 7.2. Example of the initial pivot table



Row Labels	Sum of Planned reserve (number of blood donors planned)	Sum of Actual reserve (actual number of blood donors)	Sum of Difference (Actual reserve-Planned reserve)
Centro 9 de Octubre	540	503	-37
Hospital Clínico Universitario	1125	1046	-79
Hospital Comarcal de Vinaròs	635	635	0
Hospital Dénia	1055	1096	41
Hospital General	949	985	36
Hospital General de Alicante	905	962	57
Hospital General d'Ontinyent	680	645	-35
Hospital General Universitario de Elche	1195	1145	-50
Hospital La Malvarrosa	650	727	77
Hospital La Plana	780	758	-22
Hospital La Ribera de Alzira	695	712	17
Hospital Provincial	1090	1111	21
Hospital Requena	435	431	-4
Hospital Sagunto	845	879	34
Hospital San Juan de Alicante	715	689	-26
Hospital San Vicente del Raspeig	865	887	22
Hospital Torrevieja	955	955	0
Hospital Universitario La Fe	1195	1282	87
Hospital Vega Baja de Orihuela "Vega Baja"	780	741	-39
Hospital Xàtiva "Lluís Alcanyís"	525	548	23
Grand Total	**16614**	**16737**	**123**

Next select *Analyze, Pivot Chart* (select the created pivot table with the cursor), and you will see a dialog box like the one shown in Figure 7.4.

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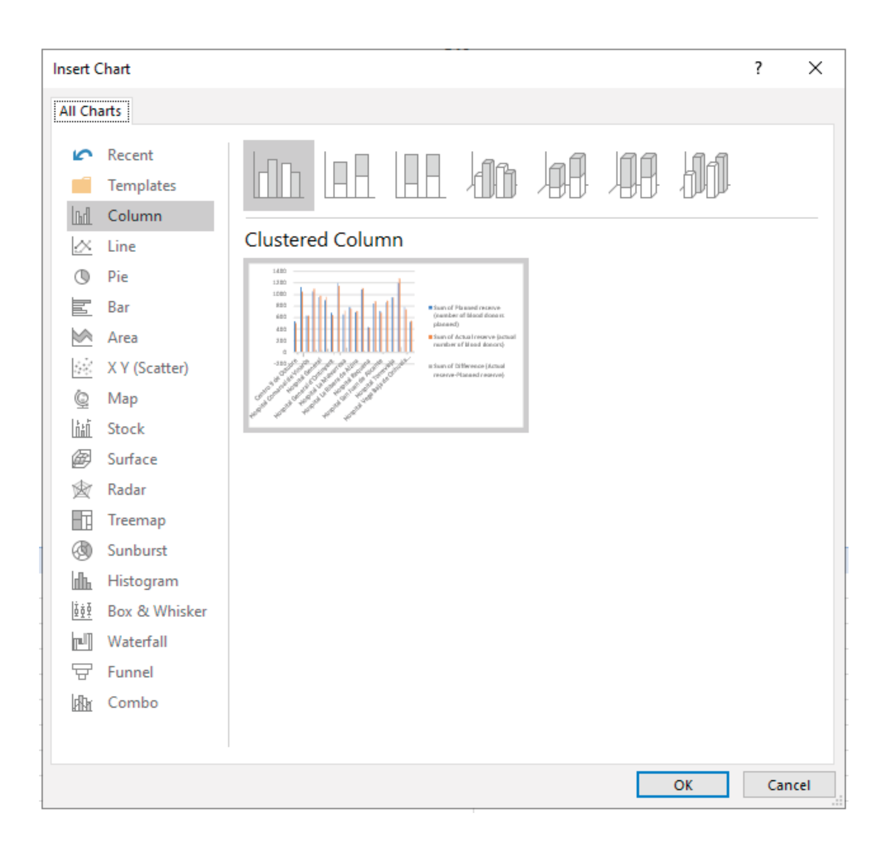


Figure 7.4. Inserting a Pivot chart

There are different options (grouped column, three-dimensional columns, etc.) for each type of chart (column, line, circle, etc.). After selecting the desired combination, click on *OK* and the graph chosen will be displayed on the screen. Excel 2019 incorporates the filters of the different fields that are part of the graph (see Figure 7.5).

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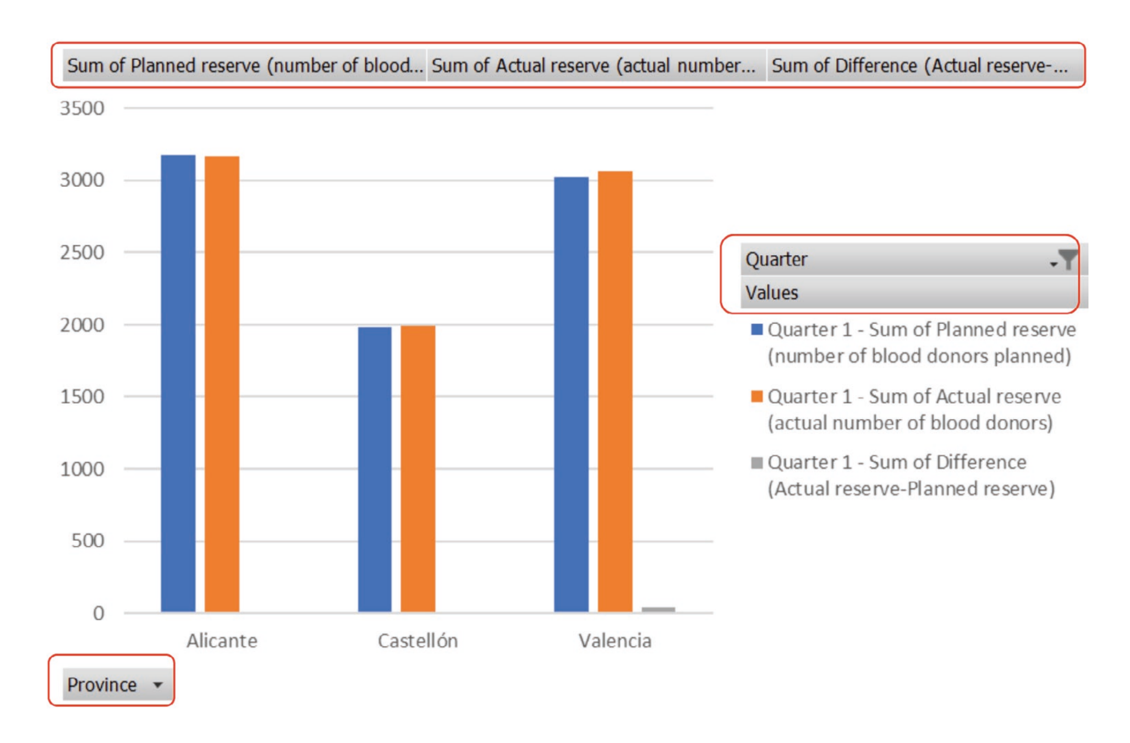


Figure 7.5. Inserting a filter

The possibilities for editing a dynamic chart in Excel are the same as those of conventional charts in this application. Excel 2019 allows you to change the characteristics within the graph itself (incorporate titles, legend, trend lines, etc.). These options are accessed by means of the + sign (see Figure 7.6).

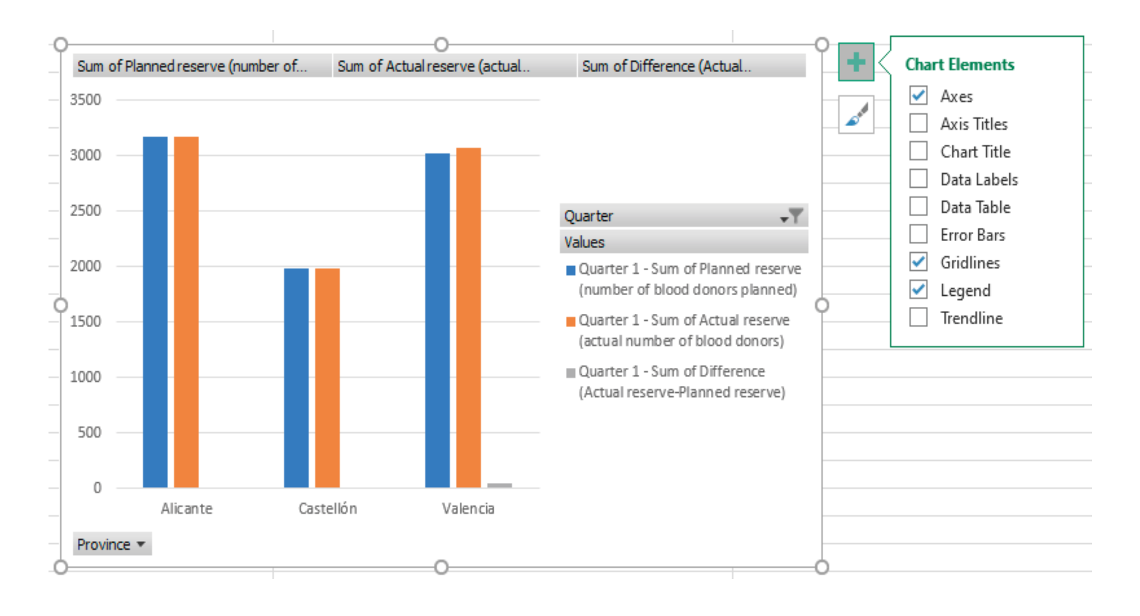


Figure 7.6. Chart Elements options

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If you select the sign with the brush for the style and colour options, Figure 7.7 below appears.

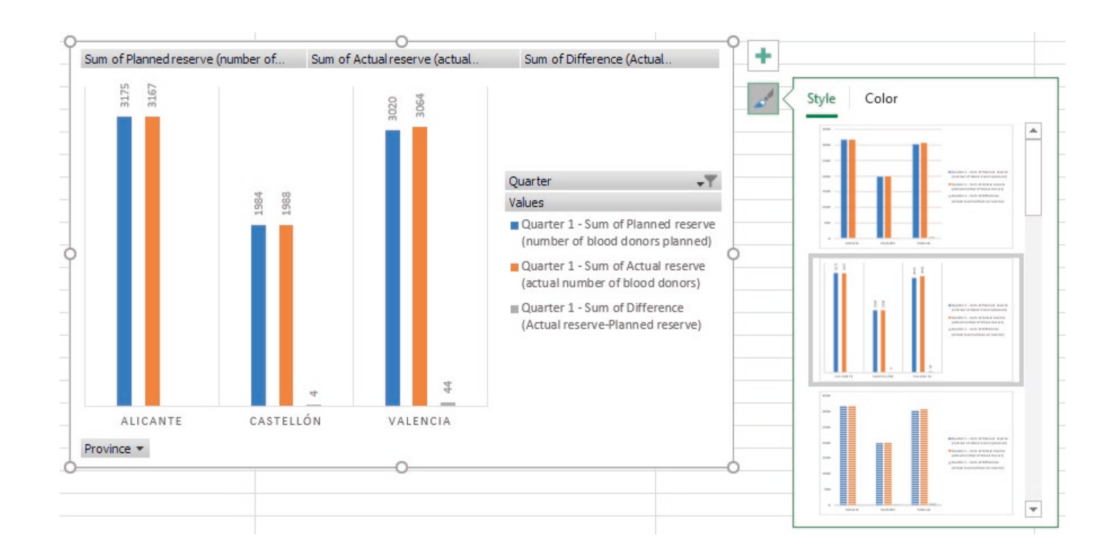


Figure 7.7. Style and Colour options

7.2. THE PIVOT CHART MENU

If you have followed the steps to create a chart from an existing pivot table, your screen will be similar to the one shown in Figure 7.8 below.

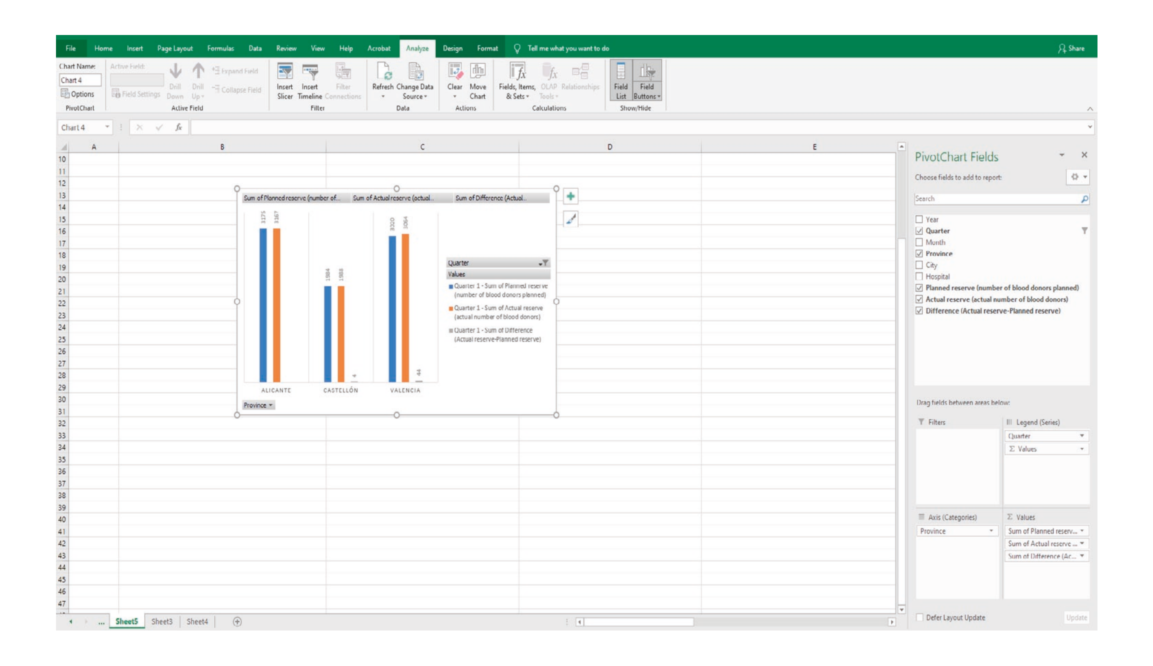


Figure 7.8. Pivot chart menu

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Contents

The characteristics of each tab will be explained below.

7.2.1. The Analyze tab

Figure 7.9 below shows the options that can be applied using the *Analyze* tab.

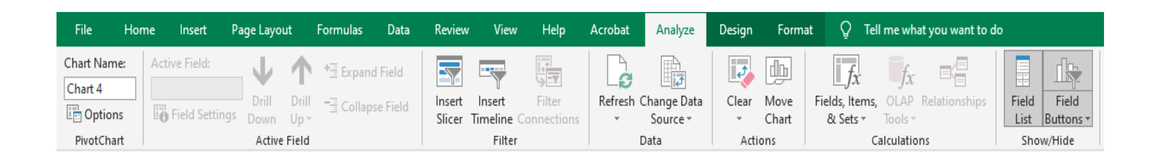


Figure 7.9. Analyze tab options

7.2.2. The Design tab

Figure 7.10 shows the options that can be applied using the *Design* tab.

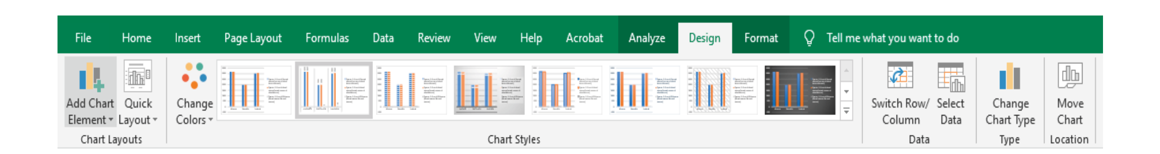


Figure 7.10. Chart designs

This tab gives the user flexibility to modify and adapt the features to their specific needs. As mentioned above, all these features are the same as those that can be applied to any chart that comes from an Excel data table.

Chart styles: allows the user to choose from a number of predefined chart types (see Figure 7.11).



Figure 7.11. Chart design styles

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Data: to change the order of the data or to select others (see Figure 7.12).

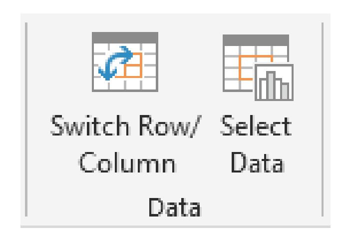


Figure 7.12. Data selection

Change chart type: if a chart is selected, this option allows you to modify its type (see Figure 7.13).

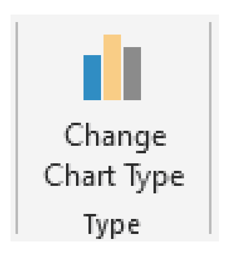


Figure 7.13. Change Chart Type

Move location: used to change the selected graph to another tab in the same book (see Figure 7.14).



Figure 7.14. Move Chart

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7.2.3. The Format tab

The Format tab also contains different options which will be explained below.

Active selection: used to apply or reset part formats of the selected graph (see Figure 7.15).

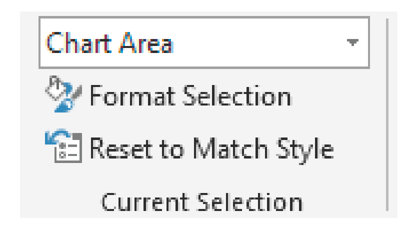


Figure 7.15. Active selection

Insert shapes (see Figure 7.16).

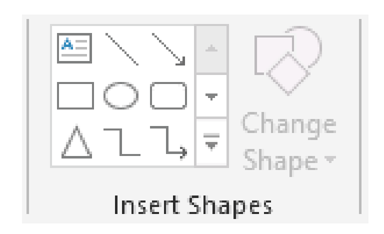


Figure 7.16. Insert Shapes

Shape and *Wordart styles* (see Figure 7.17).

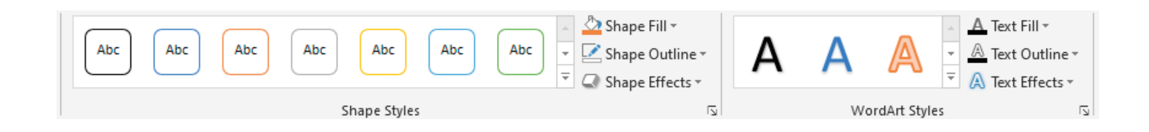


Figure 7.17. Shape Styles

Organize is used to change the position graph according to the option chosen (see Figure 7.18).

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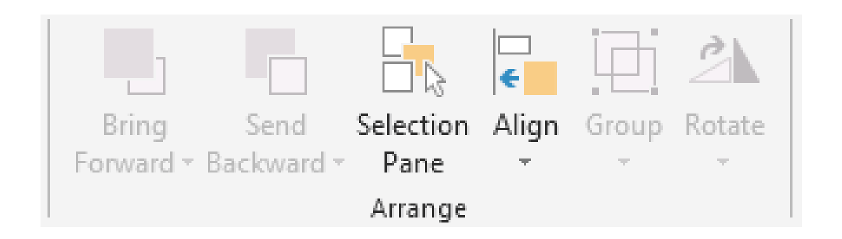


Figure 7.18. Chart organization

Size is used to modify the width and/or height of the chart (see Figure 7.19).

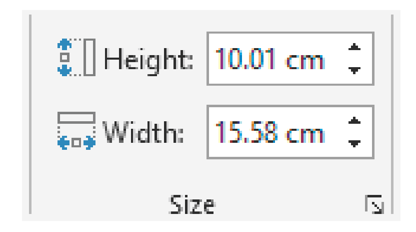


Figure 7.19. Changing the size of the chart

7.3. CHART EXAMPLES

To explain this section, we will use the example of the blood bank in the hospitals in the Valencian Community.

Based on this example, let us assume that we have the data shown in Table 7.3 below.

Table 7.3. Initial data

Year	Month	Province	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)
2018	1	Alicante	1,055	1,066
2018	1	Castellón	680	755
2018	1	Valencia	1,025	1,091
2018	2	Alicante	1,030	1,003

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Year	Month	Province	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)
2018	2	Castellón	639	598
2018	2	Valencia	965	968
2018	3	Alicante	1,090	939
2018	3	Castellón	665	635
2018	3	Valencia	1,030	1,005
2018	4	Alicante	1,100	1,063
2018	4	Castellón	665	662
2018	4	Valencia	1,035	1,035
2018	5	Alicante	1,080	1,277
2018	5	Castellón	680	669
2018	5	Valencia	1,035	1,091
2018	6	Alicante	1,115	1,139
2018	6	Castellón	665	673
2018	6	Valencia	1,060	1,080

The data are described below:

Year	Year in which donations take place
Month	Month in which donations are made
Province	Province of the hospital where donations are made
Planned reserve	Number of donors expected in each province
Actual reserve	Number of actual donors in each province

This table allows you to compare the number of actual donations by year, month and province, as well as the number of expected donors versus actual donors. Our goal is to analyze this data by creating a graph from a pivot table.

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- Generating a graph from a pivot table

A very simple pivot table will be used, based on the previous example. The pivot table will be created to simply display the quarter, along with the total number of donors (see Table 7.4).

Table 7.4. Initial pivot table example

Row Labels	Sum of Actual reserve (actual number of blood donors)
Quarter 1	8219
Quarter 2	8518
Grand Total	**16737**

With an active cell of the previous pivot table, you must select the option *Pivot chart* and choose one of the chart types. For example, we select the *Stacked Column Chart* and obtain what is shown in Figure 7.20.

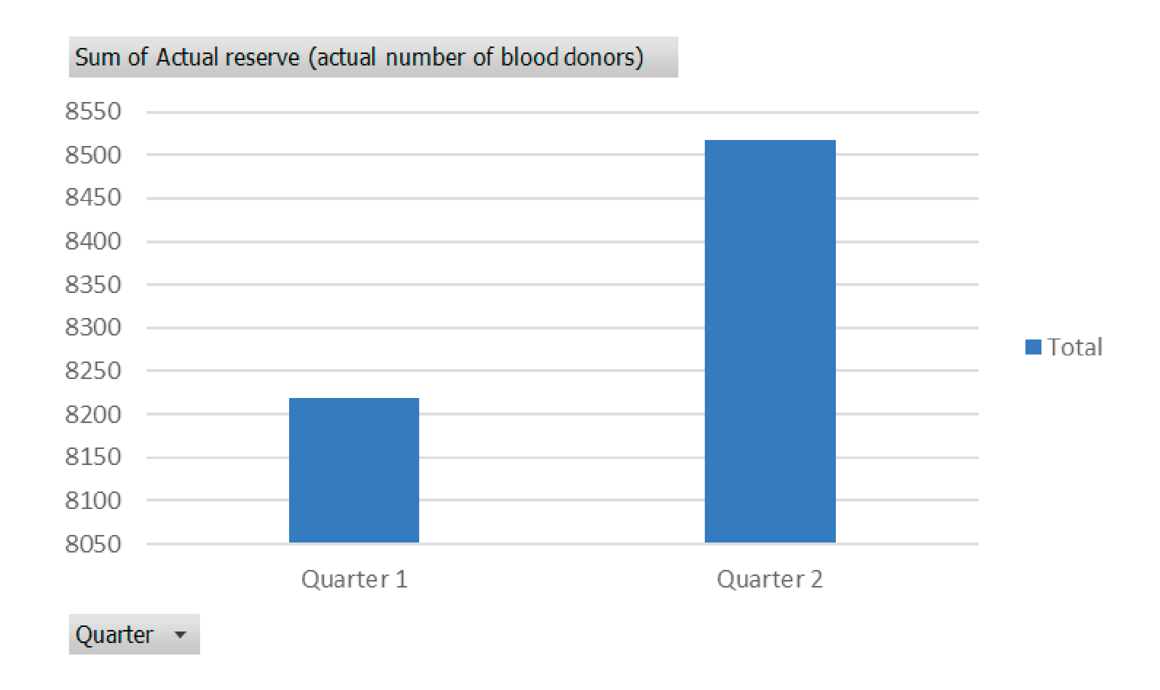


Figure 7.20. Pivot stacked column chart

Figures 7.21-7.27 show different types of analysis that can be applied on the basis of our pivot table.

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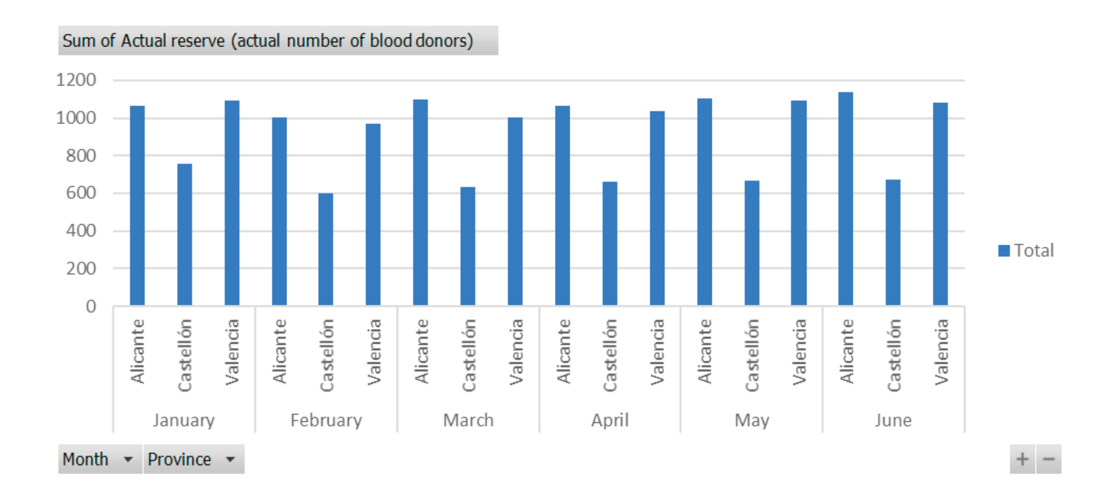


Figure 7.21. Analysis of the actual number of donors

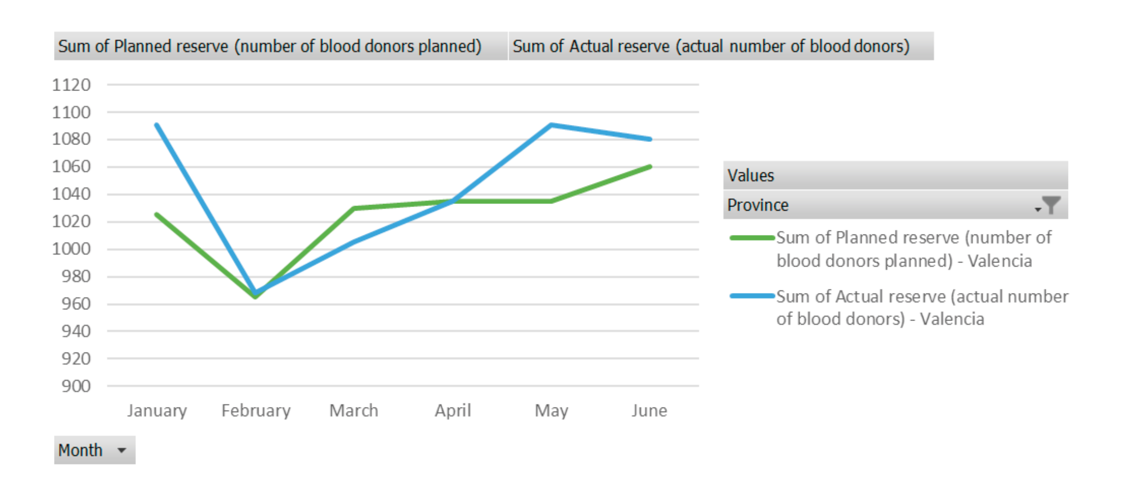


Figure 7.22. Analysis of the differences between the number of donors per month in Valencia

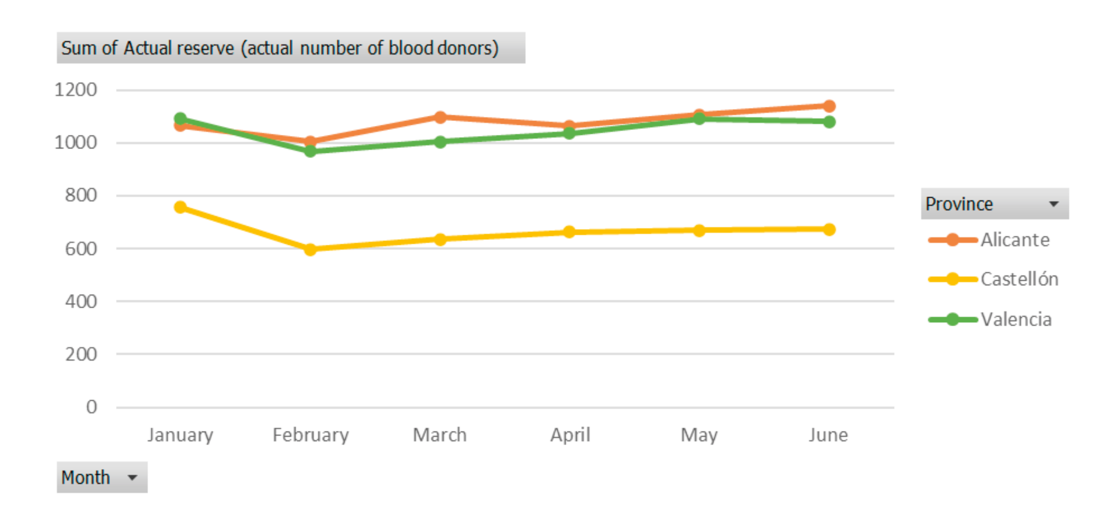


Figure 7.23. Number of donors per month

Sum of Actual reserve (actual number of blood donors)
Castellón
800
700
600
500
400
300
200
100
0
January February March April May June
Month
Province
Castellón
Linear (Castellón)

Figure 7.24. Number of donors per month with a linear trend over the year

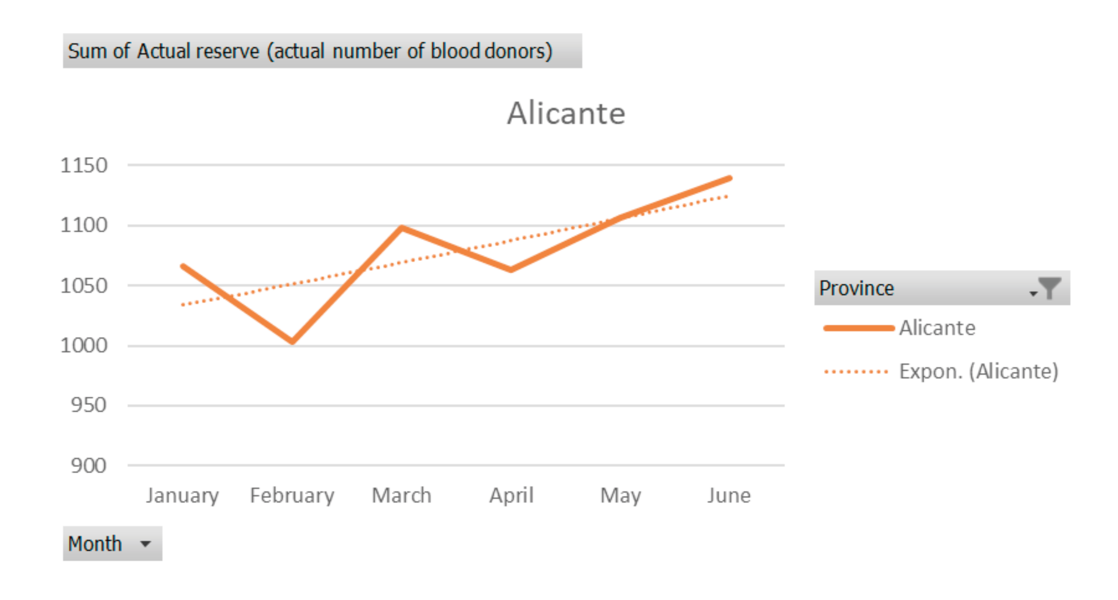


Figure 7.25. Number of donors per month with an exponential trend over the year

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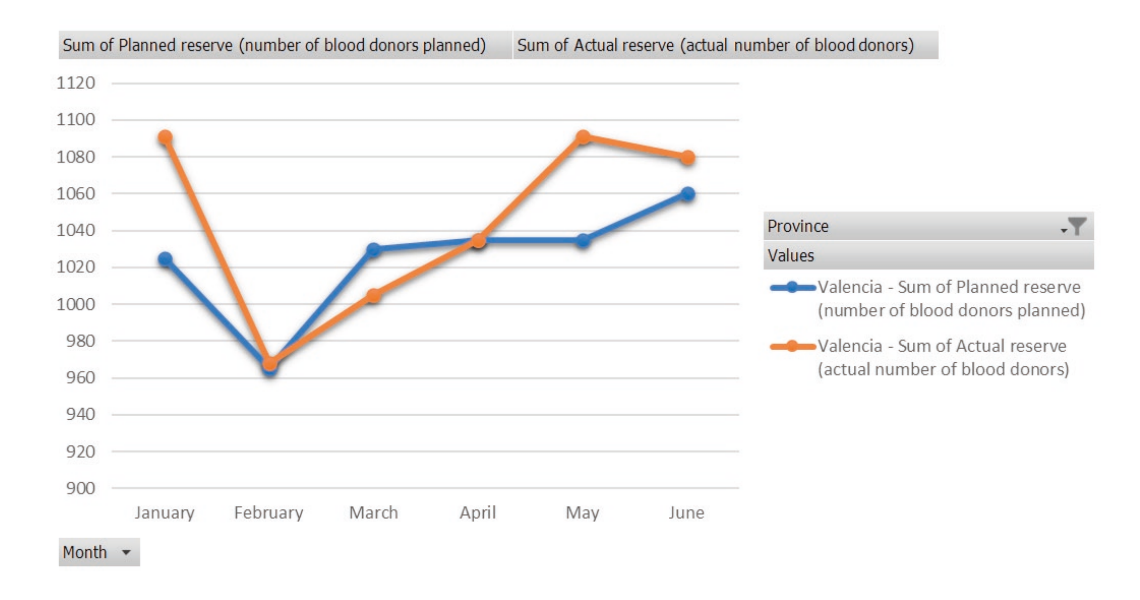


Figure 7.26. Difference between the actual and expected number of donors

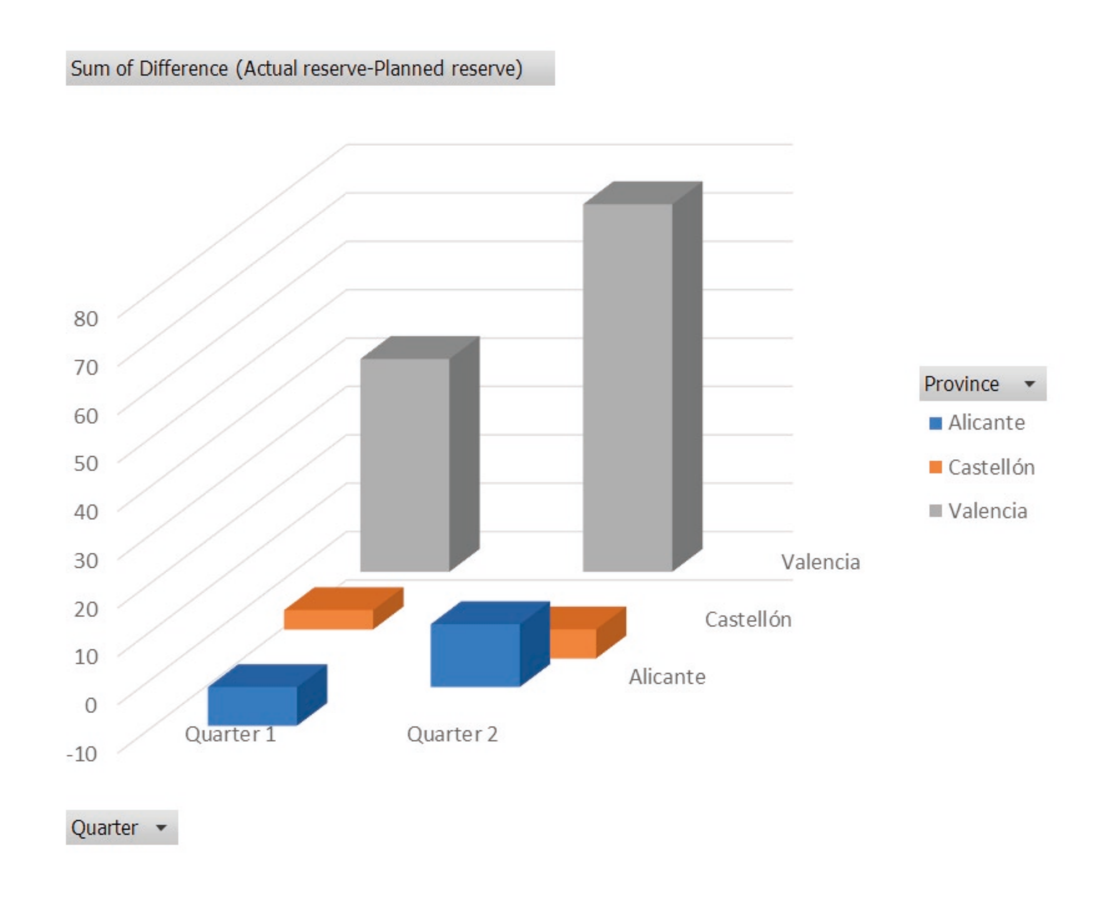


Figure 7.27. Difference between the actual and planned number of donors (II)

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Chapter 8: A practical example of the application of pivot tables

We start with the example of a company that sells fair-trade products. In order to be designated fair-trade products, the goods must comply with a series of requirements, including offering decent working conditions, rejecting child exploitation, promoting gender equality and care for the environment.

An increasing number of products meet these requirements, but in this example we will focus on one specific case. Let us suppose that our organization distributes five different products related to the food sector (chocolate, coffee, fruit juice, wine and oil).

The organization has 5 physical stores in some of Spain's largest cities: Barcelona, Bilbao, Madrid, Seville and Valencia. It also has itinerant stores, as it attends various gastronomic fairs every month in cities all over Spain, and has attended events in Badajoz, Cádiz, Castellón, Córdoba, Gijón, Huelva, Logroño, Málaga, O Cebreiro, Potes, Santillana del Mar and Teruel every year since 2013.

Our organization has collected data on the sales of each product in each city since 2013 (Table 8.1.). In addition to the city, the table shows the type of store (physical or itinerant), the month (both numerically and qualitatively), the quarter, semester, year, type of product and monthly sales in Euros.

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Table 8.1. Sales (in Euros) of fair-trade products in different Spanish cities

City	Store type	Month	Month_Name	Trimester	Semester	Year	Product	Sales (euros)
Barcelona	Permanent	1	January	Trimester 1	Semester 1	2013	Olive oil	4009.80
Barcelona	Permanent	1	January	Trimester 1	Semester 1	2013	Coffee	1205.40
Barcelona	Permanent	1	January	Trimester 1	Semester 1	2013	Chocolate	636.73
Barcelona	Permanent	1	January	Trimester 1	Semester 1	2013	Wine	8487.00
Barcelona	Permanent	1	January	Trimester 1	Semester 1	2013	Fruit juice	910.20
Bilbao	Permanent	1	January	Trimester 1	Semester 1	2013	Olive oil	2460.00
Bilbao	Permanent	1	January	Trimester 1	Semester 1	2013	Coffee	1230.00
Bilbao	Permanent	1	January	Trimester 1	Semester 1	2013	Chocolate	861.00
Bilbao	Permanent	1	January	Trimester 1	Semester 1	2013	Wine	3116.00
Bilbao	Permanent	1	January	Trimester 1	Semester 1	2013	Fruit juice	902.00
Madrid	Permanent	1	January	Trimester 1	Semester 1	2013	Olive oil	4132.80
Madrid	Permanent	1	January	Trimester 1	Semester 1	2013	Coffee	1328.40
Madrid	Permanent	1	January	Trimester 1	Semester 1	2013	Chocolate	759.73
Madrid	Permanent	1	January	Trimester 1	Semester 1	2013	Wine	8610.00
Madrid	Permanent	1	January	Trimester 1	Semester 1	2013	Fruit juice	1033.20
Potes	Itinerant	1	January	Trimester 1	Semester 1	2013	Olive oil	514.51
Potes	Itinerant	1	January	Trimester 1	Semester 1	2013	Coffee	725.14
Potes	Itinerant	1	January	Trimester 1	Semester 1	2013	Chocolate	320.40
Potes	Itinerant	1	January	Trimester 1	Semester 1	2013	Wine	1259.68
Potes	Itinerant	1	January	Trimester 1	Semester 1	2013	Fruit juice	322.92
Sevilla	Permanent	1	January	Trimester 1	Semester 1	2013	Olive oil	2583.00
Sevilla	Permanent	1	January	Trimester 1	Semester 1	2013	Coffee	1271.00

The result is a spreadsheet that contains more than 2000 rows, so pivot tables can be used to analyze and better understand various aspects of the organization's work.

However, this raises a series of questions:

1. What were the trends in total sales between 2013 and 2018, and in the sales of each type of product?
2. How does the distribution of the sales at trade fairs compare to sales at permanent distribution points? What is the relative weight of the sales in each of these types of stores?
3. How have total sales changed in each city?
4. What is the star product in each city, and what is its relative weight within the total sales of each city?
5. Taking all the data series into account, in which months were there the most sales of each type of product? Is the same pattern present in fixed and itinerant stores?
6. Considering only the data for 2018, which locations were the best/worst for each type of product marketed?
7. In the 2018 data, which three cities had the highest and lowest sales? Can we obtain a ranking of cities classified according to their 2018 sales?

All these questions and many more can be answered by taking advantage of the knowledge obtained from reading this book. Let us look one by one at some

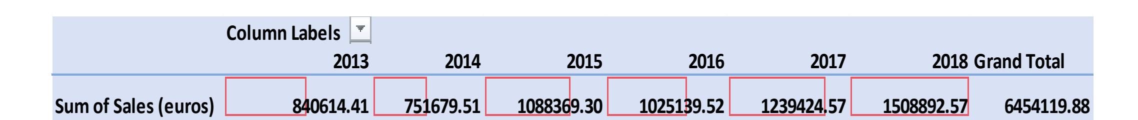
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of the ways to exploit and present the data in a way that satisfies the information needs of our company.

Question 1. What were the trends in total sales between 2013 and 2018, and in the sales of each type of product?

Using the conditional format (data bars) on the pivot table, we can obtain the summary presented in Table 8.2 as a result. In addition to the quantities, it contains a bar that shows the continued growth of sales in the years analyzed. For greater clarity, a dynamic graph can also be produced using this information if desired (Figure 8.1.).

Table 8.2. Total sales (2013-2018)



	Column Labels						
	2013	2014	2015	2016	2017	2018	Grand Total
Sum of Sales (euros)	840614.41	751679.51	1088369.30	1025139.52	1239424.57	1508892.57	6454119.88

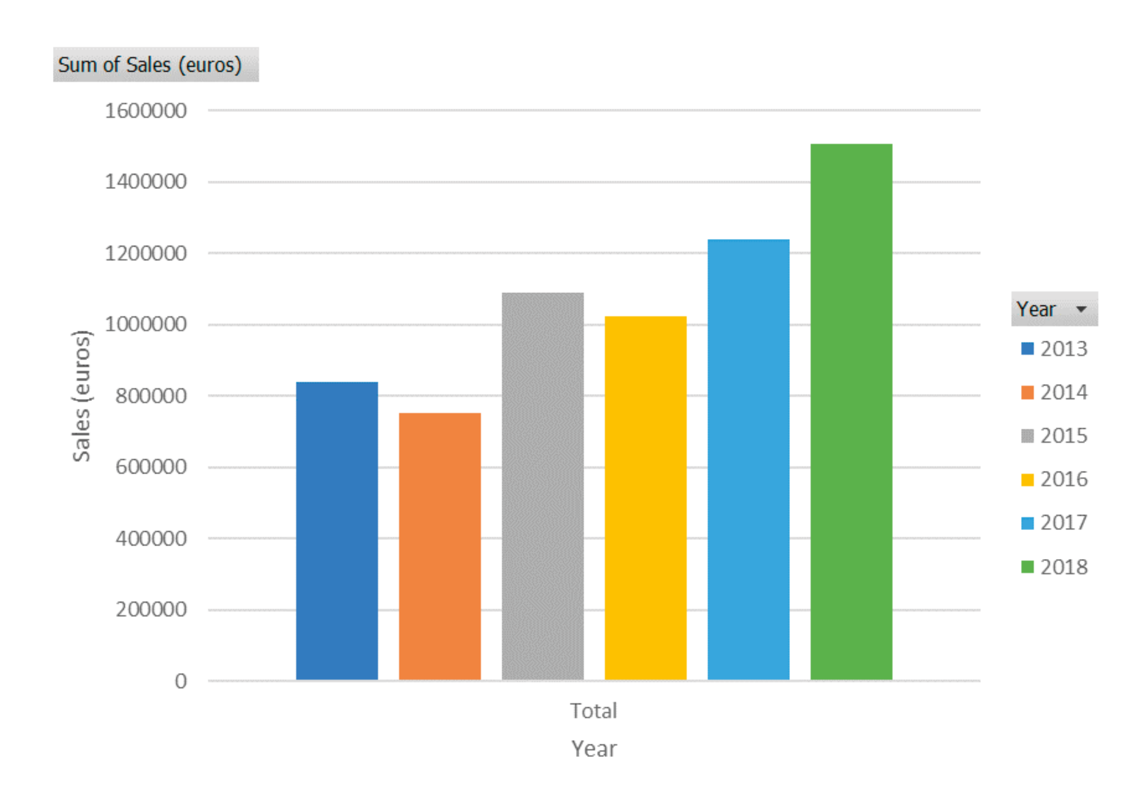


Figure 8.1. Annual sales (2013-2018)

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By slightly modifying the pivot table, we can access the details of annual sales for each product marketed (Table 8.3.). The data are displayed in Figure 8.2.

Table 8.3. Annual sales by product type

Sum of Sales (euros) Row Labels	Column Labels 2013	2014	2015	2016	2017	2018	Grand Total
Chocolate	57330.10	66419.01	68855.08	69914.75	81101.08	94077.19	437697.21
Coffee	110361.72	123820.46	145261.89	134587.46	168234.41	210293.07	892559.01
Fruit juice	106019.34	109898.10	147574.42	129291.88	152564.44	180025.98	825374.16
Olive oil	200816.23	183673.38	219561.12	244897.84	257142.72	269999.90	1376091.19
Wine	366087.02	267868.55	507116.80	446447.59	580381.92	754496.43	2922398.32
Grand Total	**840614.41**	**751679.51**	**1088369.30**	**1025139.52**	**1239424.57**	**1508892.57**	**6454119.88**

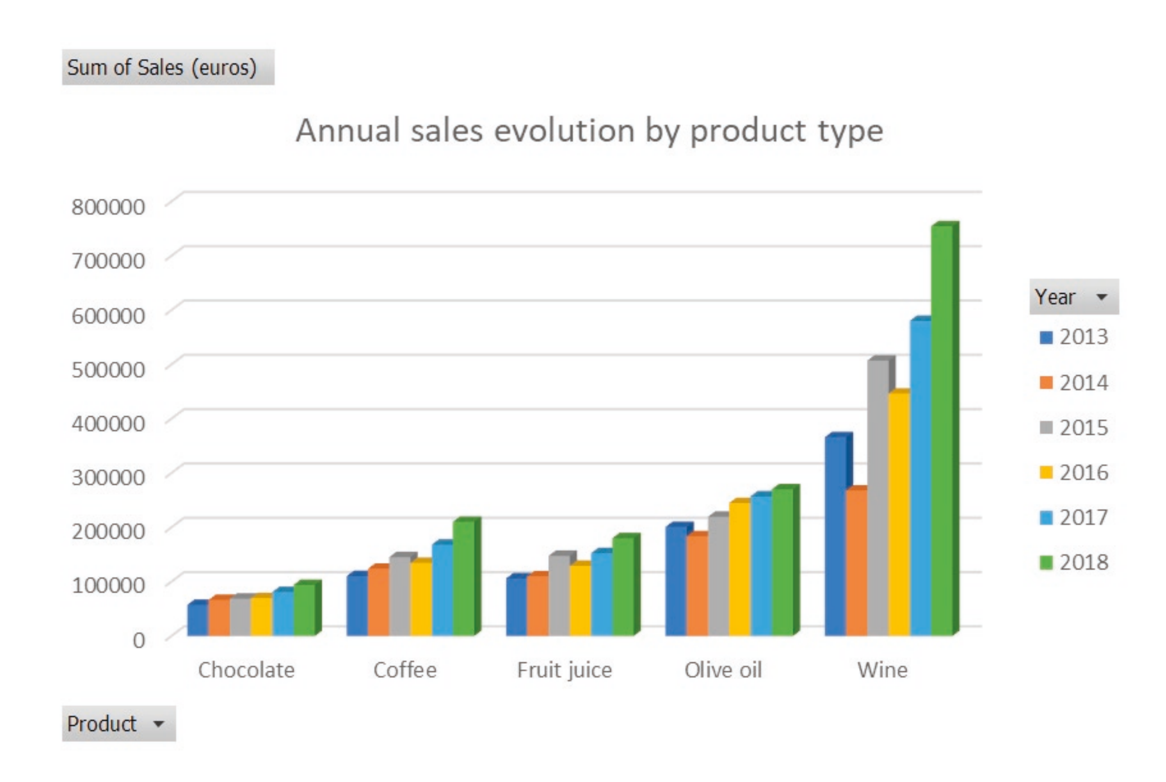


Figure 8.2. Annual sales by product type

Question 2. How does the distribution of the sales at trade fairs compare to sales at permanent distribution points? What is the relative weight of the sales in each of these types of stores?

Table 8.4 summarizes the information in absolute values, while Table 8.5 does so in relative values. As can be seen, sales at both permanent and itinerant distribution points increased over the years studied. On the other hand, the

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proportion between both types of store remains more or less constant, as the itinerant roaming stores only account for approximately 6% of the total sales in each year. Figure 8.3 shows the distribution of sales between the two types of store for 2018.

Table 8.4. Sales: itinerant vs. permanent (absolute values)

Sum of Sales (euros)	Column Labels						
Row Labels	2013	2014	2015	2016	2017	2018	Grand Total
Itinerant	51716.22	49611.12	68279.77	63068.56	75870.17	91698.01	400243.85
Permanent	788898.19	702068.38	1020089.54	962070.96	1163554.40	1417194.56	6053876.03
Grand Total	**840614.41**	**751679.51**	**1088369.30**	**1025139.52**	**1239424.57**	**1508892.57**	**6454119.88**

Table 8.5. Sales: itinerant vs. permanent (relative values)

Sum of Sales (euros)	Column Labels						
Row Labels	2013	2014	2015	2016	2017	2018	Grand Total
Itinerant	6.15%	6.60%	6.27%	6.15%	6.12%	6.08%	6.20%
Permanent	93.85%	93.40%	93.73%	93.85%	93.88%	93.92%	93.80%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

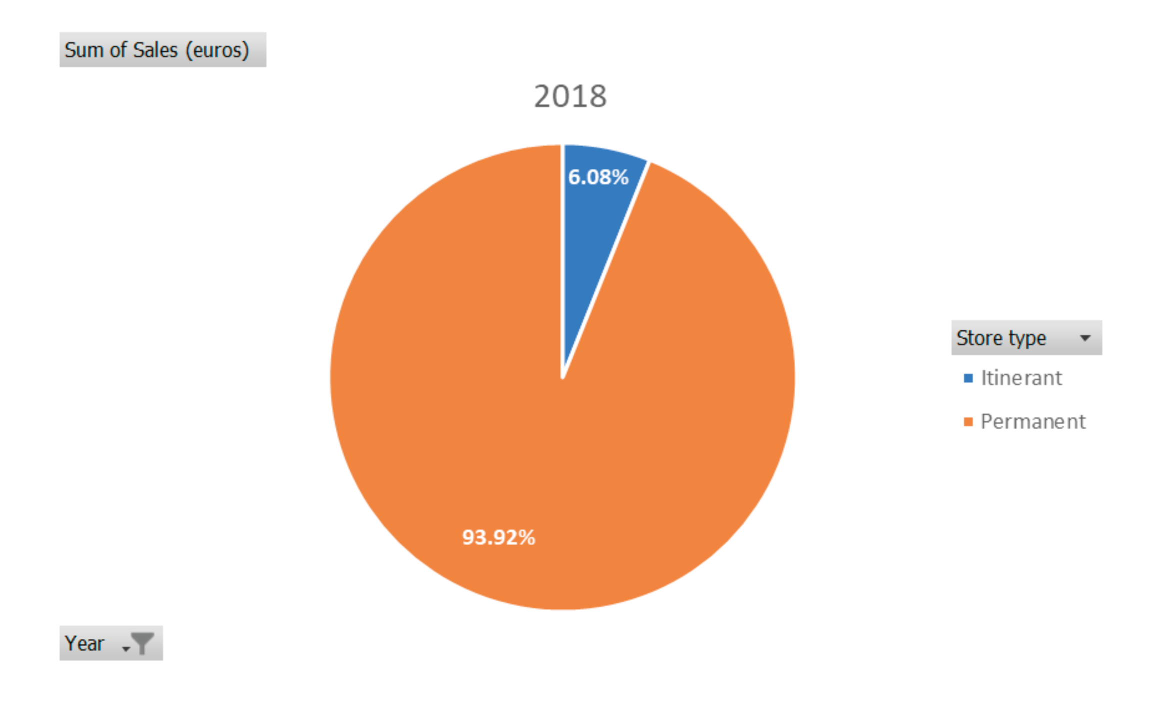


Figure 8.3. Relative weight of sales in permanent vs. itinerant stores (2018)

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Question 3. How have total sales changed in each city?

To facilitate interpretation of the results, a distinction has again been made between fixed (Table 8.6.) and itinerant distribution centres (Table 8.7.), showing the detail of sales for each city and year available in each case. It has also been represented graphically (Figures 8.4. and 8.5.)

Table 8.6. Sales by city (permanent stores)

Store type	Permanent						
Sum of Sales (euros)	**Column Labels**						
Row Labels	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Grand Total**
Barcelona	212924.59	182741.60	241969.47	259664.13	316737.24	389108.77	1603145.79
Bilbao	122801.43	113981.65	177893.94	149757.84	179495.28	216585.15	960515.29
Madrid	220304.59	190067.60	316285.04	268664.13	327429.24	401876.18	1724626.77
Sevilla	125043.79	116185.77	156773.47	152492.43	182420.32	219707.55	952623.34
Valencia	107823.79	99091.77	127167.62	131492.43	157472.32	189916.91	812964.84
Grand Total	**788898.19**	**702068.38**	**1020089.54**	**962070.96**	**1163554.40**	**1417194.56**	**6053876.03**

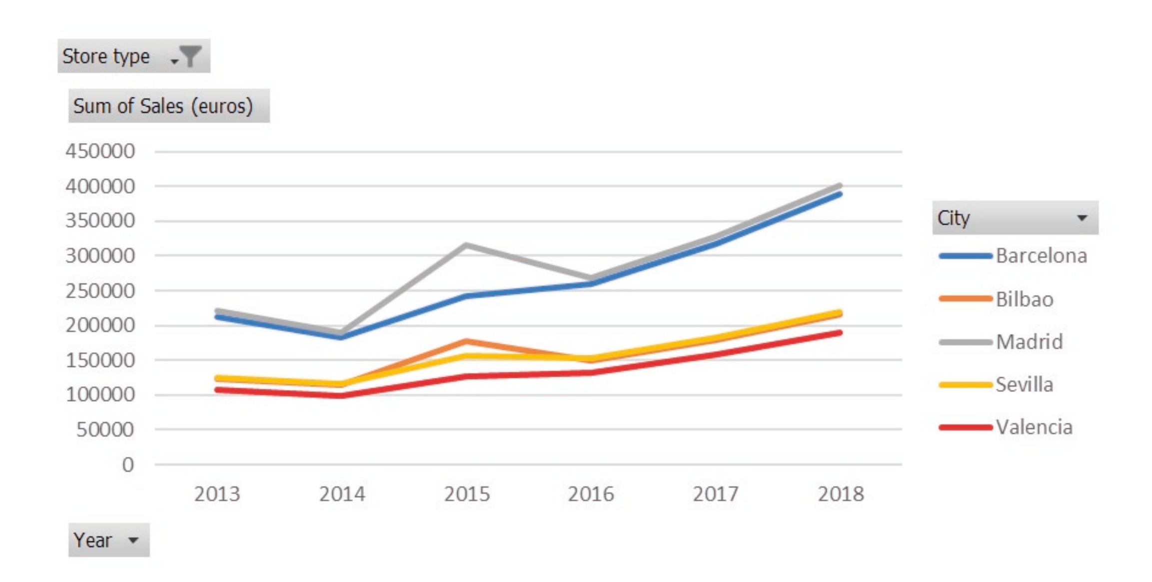


Figure 8.4. Sales by city (permanent stores)

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Table 8.7. Sales by city (itinerant stores)

Store type	Itinerant						
Sum of Sales (euros)	**Column Labels**						
Row Labels	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Grand Total**
Badajoz	3821.89	3687.86	6325.42	4660.84	5614.02	6790.10	30900.13
Cádiz	3485.00	3370.37	4639.16	4250.00	5113.65	6178.84	27037.02
Castellón	4443.39	4297.23	6056.25	5418.77	6519.91	7878.01	34613.57
Córdoba	4094.89	3951.28	5147.83	4993.77	6015.01	7275.12	31477.91
Gijón	8189.75	7902.54	4744.08	9987.50	12030.02	14550.22	57404.11
Huelva	5459.84	5268.36	9488.13	6658.34	8020.00	9700.14	44594.81
Logroño	5350.63	5162.98	4427.80	6525.16	7859.60	9506.14	38832.31
Málaga	5227.50	5055.55	4037.50	6375.00	7670.48	9268.25	37634.28
O Cebreiro	2002.17	1878.69	2889.59	2441.67	2908.86	3489.05	15610.02
Potes	3142.66	2911.81	14563.54	3832.51	4679.22	5743.80	34873.54
Santillana del Mar	2494.17	2367.09	3640.88	3041.67	3621.66	4340.22	19505.69
Teruel	4004.33	3757.36	2319.59	4883.33	5817.74	6978.12	27760.47
Grand Total	**51716.22**	**49611.12**	**68279.77**	**63068.56**	**75870.17**	**91698.01**	**400243.85**

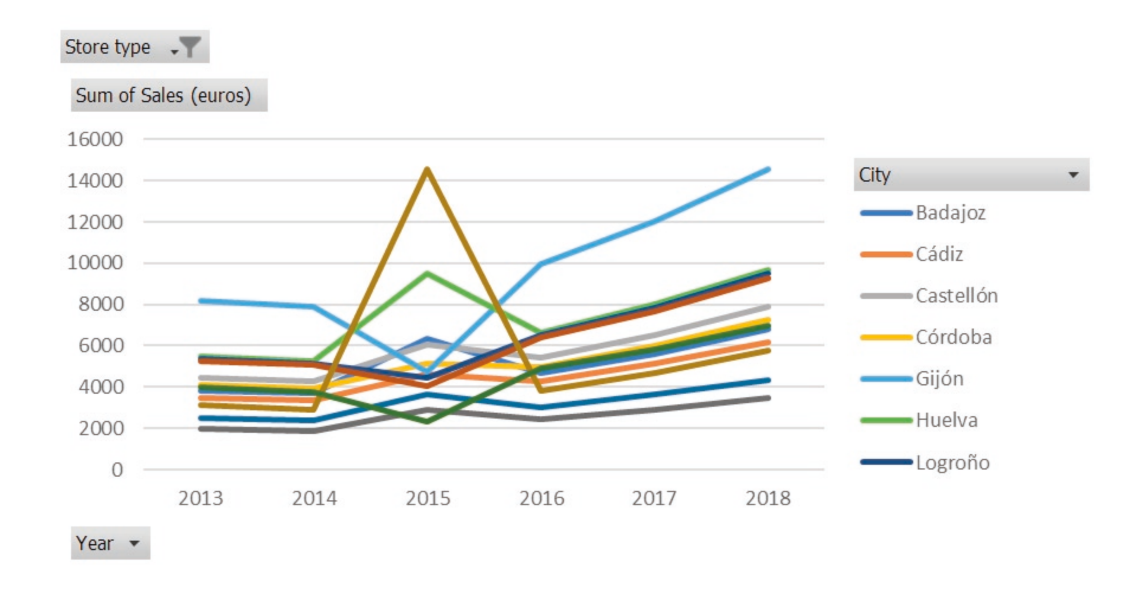


Figure 8.5. Sales by city (itinerant stores)

Question 4. What is the star product in each city, and what is its relative weight within the total sales of each city?

Although the form of the question means it is necessary to perform an analysis for each city, we initially analyzed the case of the Barcelona store (Table 8.8.). When showing the data for the other cities, it would be sufficient to modify the filter that appears at the top of the pivot table, indicating the city for which the

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information is desired. Figure 8.6 shows the evolution sales for each type of product in this store. The sales trend is upwards for all the products marketed between 2013 and 2018, and the star product every year is clearly wine.

Table 8.8. Sales by product in the Barcelona store (2013-2018)

City	Barcelona						
Store type	Permanent						
Sum of Sales (euros)	**Column Labels**						
Row Labels	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Grand Total**
Chocolate	8188.90	9487.14	9366.28	9986.46	11584.29	13437.77	62050.83
Coffee	21541.86	24168.92	22895.29	26270.56	32838.22	41047.79	168762.63
Fruit juice	19221.96	19925.20	22436.03	23441.41	27660.87	32639.82	145325.29
Olive oil	50189.07	45904.64	57829.85	61206.18	64266.48	67479.81	346876.02
Wine	113782.81	83255.71	129442.02	138759.52	180387.38	234503.58	880131.01
Grand Total	**212924.59**	**182741.60**	**241969.47**	**259664.13**	**316737.24**	**389108.77**	**1603145.79**

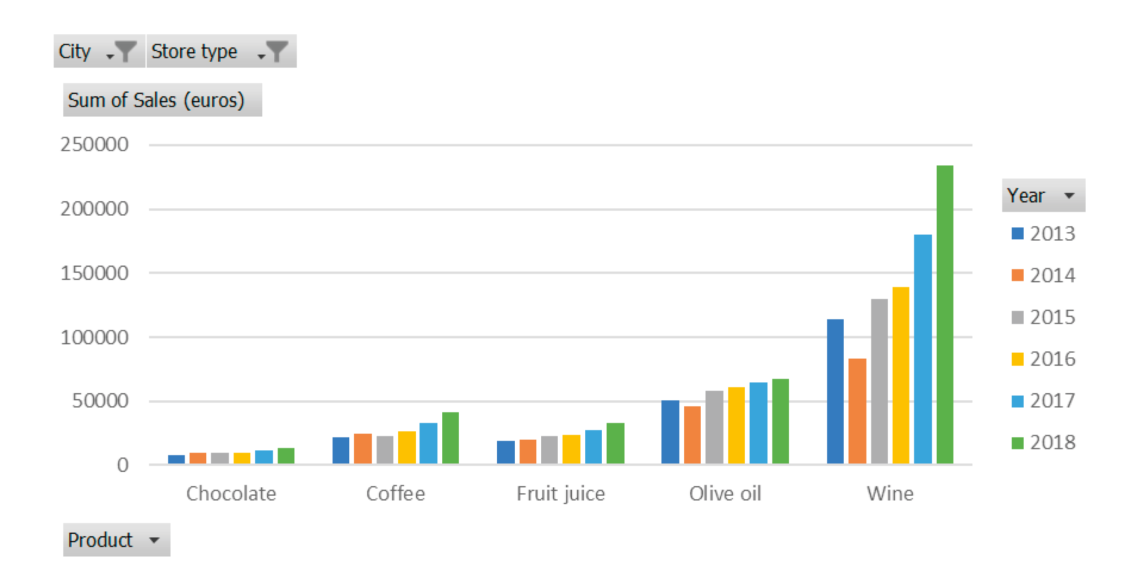


Figure 8.6. Sales by product in the Barcelona store (2013-2018)

Following the example of the Barcelona store, another possibility is to obtain data exclusively for the last year available (Table 8.9) and from there, to produce a graph that better represents how the sales of each type of product are distributed (Figure 8.7.). In Table 8.9., the conditional format option has also used icons to highlight the highest data.

Table 8.9. Product sales in Barcelona store (2018)

Year	2018	
City	Barcelona	
Store type	Permanent	
Row Labels	**Sum of Sales (euros)**	
Chocolate	↓	13437.77
Coffee	↓	41047.79
Fruit juice	↓	32639.82
Olive oil	↓	67479.81
Wine	↑	234503.58
Grand Total		**389108.77**

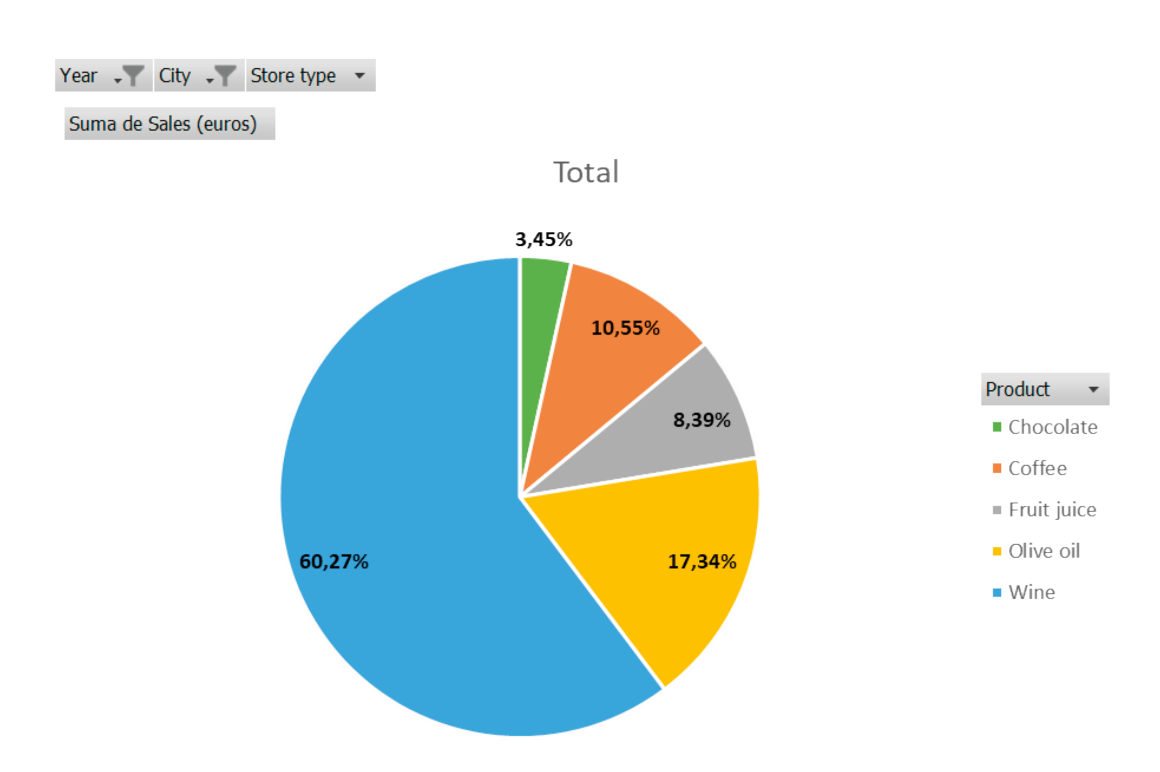


Figure 8.7. Sales by product in Barcelona (2013-2018)

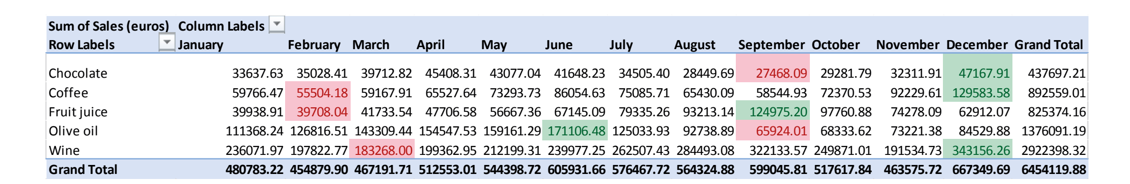
Question 5. Taking all the data series into account, in which months were there the most sales of each type of product? Is the same pattern present in fixed and itinerant stores?

First, Table 8.10 presents the sales of each product type by month. The conditional format has been used to highlight the best and worst data for each

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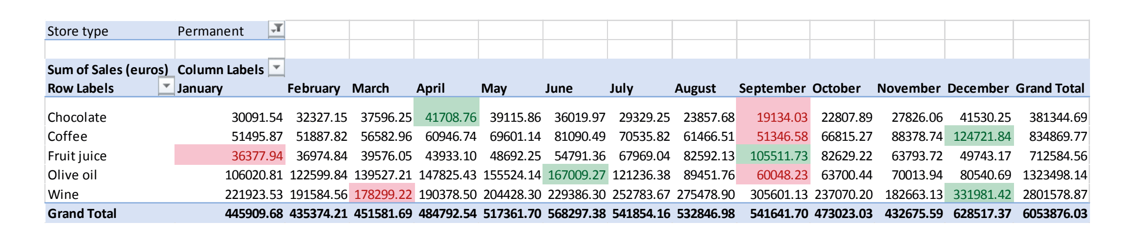
type of product. For example, for olive oil, the best month is June (highlighted in green), while the worst is September (highlighted in red). Reading the information presented in Tables 8.11 and 8.12 tells us that the pattern of best and worst months is not the same in itinerant and permanent stores. As can be seen, March is the worst month for all products except for olive oil in itinerant stores. Nor is there a similar pattern for the best month for each type of product when distinguishing between one type of shop and another.

Table 8.10. Sales of each type of product (best and worst month without distinguishing between the type of store)



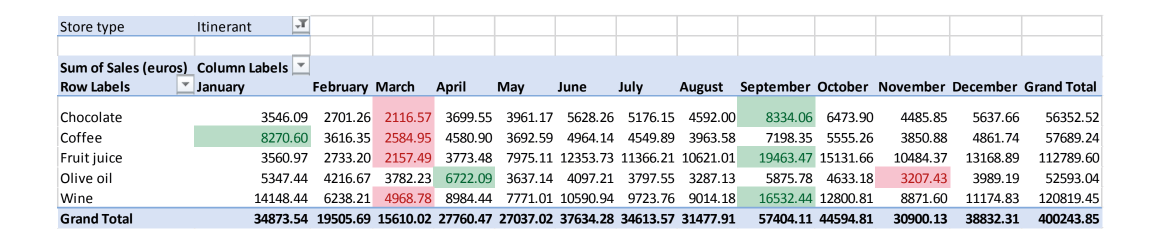
Sum of Sales (euros)	Column Labels												
Row Labels	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Chocolate	33637.63	35028.41	39712.82	45408.31	43077.04	41648.23	34505.40	28449.69	27468.09	29281.79	32311.91	47167.91	437697.21
Coffee	59766.47	55504.18	59167.91	65527.64	73293.73	86054.63	75085.71	65430.09	58544.93	72370.53	92229.61	129583.58	892559.01
Fruit juice	39938.91	39708.04	41733.54	47706.58	56667.36	67145.09	79335.26	93213.14	124975.20	97760.88	74278.09	62912.07	825374.16
Olive oil	111368.24	126816.51	143309.44	154547.53	159161.29	171106.48	125033.93	92738.89	65924.01	68333.62	73221.38	84529.88	1376091.19
Wine	236071.97	197822.77	183268.00	199362.95	212199.31	239977.25	262507.43	284493.08	322133.57	249871.01	191534.73	343156.26	2922398.32
Grand Total	**480783.22**	**454879.90**	**467191.71**	**512553.01**	**544398.72**	**605931.66**	**576467.72**	**564324.88**	**599045.81**	**517617.84**	**463575.72**	**667349.69**	**6454119.88**

Table 8.11. Sales of each type of product (best and worst month, permanent stores)



Store type	Permanent												
Sum of Sales (euros)	Column Labels												
Row Labels	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Chocolate	30091.54	32327.15	37596.25	41708.76	39115.86	36019.97	29329.25	23857.68	19134.03	22807.89	27826.06	41530.25	381344.69
Coffee	51495.87	51887.82	56582.96	60946.74	69601.14	81090.49	70535.82	61466.51	51346.58	66815.27	88378.74	124721.84	834869.77
Fruit juice	36377.94	36974.84	39576.05	43933.10	48692.25	54791.36	67969.04	82592.13	105511.73	82629.22	63793.72	49743.17	712584.56
Olive oil	106020.81	122599.84	139527.21	147825.43	155524.14	167009.27	121236.38	89451.76	60048.23	63700.44	70013.94	80540.69	1323498.14
Wine	221923.53	191584.56	178299.22	190378.50	204428.30	229386.30	252783.67	275478.90	305601.13	237070.20	182663.13	331981.42	2801578.87
Grand Total	**445909.68**	**435374.21**	**451581.69**	**484792.54**	**517361.70**	**568297.38**	**541854.16**	**532846.98**	**541641.70**	**473023.03**	**432675.59**	**628517.37**	**6053876.03**

Table 8.12. Sales of each type of product (best and worst month, itinerant stores)



Store type	Itinerant												
Sum of Sales (euros)	Column Labels												
Row Labels	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Chocolate	3546.09	2701.26	2116.57	3699.55	3961.17	5628.26	5176.15	4592.00	8334.06	6473.90	4485.85	5637.66	56352.52
Coffee	8270.60	3616.35	2584.95	4580.90	3692.59	4964.14	4549.89	3963.58	7198.35	5555.26	3850.88	4861.74	57689.24
Fruit juice	3560.97	2733.20	2157.49	3773.48	7975.11	12353.73	11366.21	10621.01	19463.47	15131.66	10484.37	13168.89	112789.60
Olive oil	5347.44	4216.67	3782.23	6722.09	3637.14	4097.21	3797.55	3287.13	5875.78	4633.18	3207.43	3989.19	52593.04
Wine	14148.44	6238.21	4968.78	8984.44	7771.01	10590.94	9723.76	9014.18	16532.44	12800.81	8871.60	11174.83	120819.45
Grand Total	**34873.54**	**19505.69**	**15610.02**	**27760.47**	**27037.02**	**37634.28**	**34613.57**	**31477.91**	**57404.11**	**44594.81**	**30900.13**	**38832.31**	**400243.85**

Question 6. Considering only the data for 2018, which locations were the best/worst for each type of product marketed?

In our original table (see Table 8.1.) there is a column in which the location number is specified. If this column had not been there, one possibility would have been to use the "Group selection" option presented in section 2.4. Another

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is to create it using the conditional function IF from the column where the month number is specified.

Leaving these considerations aside, we have used colour scales to highlight the information being sought. The information has again been divided into three tables. The first does not distinguish between the types of stores (Table 8.13.) while the others do (Tables 8.14. and 8.15.)

As the conditional format has been used in this example, the colour scale must be interpreted, row by row, i.e. product by product. In addition, the colours chosen should be interpreted in terms of a traffic light: the data in green are the most positive (the more positive, the greater the intensity of the green colour) and the data in red are negative (the more negative, the greater the intensity of the red). The data shown in yellow are average data within the series.

If we look at the data summarized in Table 8.13 and at the line where the oil sales data by location appears, we can see that two data in green are highlighted, and the colour of the second location is more intense, which indicates that this is the best data. The worst location, which is the fourth, is shaded in red. The other lines should be interpreted in a similar way.

Table 8.13. Quarterly sales by product type (2018)

Store type	(All)				
Year	2018				
Sum of Sales (euros)	Column Labels				
Row Labels	Trimester 1	Trimester 2	Trimester 3	Trimester 4	Grand Total
Chocolate	23260.61	27881.94	19198.87	23735.77	94077.19
Coffee	39911.93	53481.37	46152.76	70747.01	210293.07
Fruit juice	26261.16	38078.98	66141.74	49544.10	180025.98
Olive oil	75108.26	96140.61	53832.31	44918.72	269999.90
Wine	155064.93	170135.84	227012.25	202283.41	754496.43
Grand Total	**319606.89**	**385718.74**	**412337.93**	**391229.01**	**1508892.57**

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Table 8.14. Quarterly sales by product type: permanent stores (2018)

Store type	Permanent				
Year	2018				
Sum of Sales (euros)	**Column Labels**				
Row Labels	**Trimester 1**	**Trimester 2**	**Trimester 3**	**Trimester 4**	**Grand Total**
Chocolate	21707.71	24880.13	15184.27	20251.58	82023.69
Coffee	37155.18	50204.02	42287.91	67413.06	197060.17
Fruit juice	24626.75	32280.80	56543.23	41075.16	154525.94
Olive oil	72858.30	93309.02	51245.84	42691.86	260105.02
Wine	149685.88	162619.56	217373.33	193800.97	723479.74
Grand Total	**306033.82**	**363293.53**	**382634.58**	**365232.63**	**1417194.56**

Table 8.15. Quarterly sales by product type: itinerant stores (2018)

Store type	Itinerant				
Year	2018				
Sum of Sales (euros)	**Column Labels**				
Row Labels	**Trimester 1**	**Trimester 2**	**Trimester 3**	**Trimester 4**	**Grand Total**
Chocolate	1552.90	3001.81	4014.60	3484.19	12053.50
Coffee	2756.75	3277.35	3864.85	3333.95	13232.90
Fruit juice	1634.41	5798.18	9598.51	8468.94	25500.04
Olive oil	2249.96	2831.59	2586.47	2226.86	9894.88
Wine	5379.05	7516.28	9638.92	8482.44	31016.69
Grand Total	**13573.07**	**22425.21**	**29703.35**	**25996.38**	**91698.01**

Question 7. In the 2018 data, which three cities had the highest and lowest sales? Can we obtain a ranking of cities classified according to their 2018 sales?

On this occasion, we apply the conditional format to the column showing the grand total (see Table 8.16.), indicating that it highlights the three best and the three worst data using green and red respectively. In other words, in this example two rules have been created - one for the most positive data and another for the most negative, with a different format specified in each case. If the three data had not been highlighted in each case, it would also have been useful to apply the colour scale option in the column with the grand total (see Table 8.17.).

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Table 8.16. Three cities with the highest and lowest sales (2018)

Sum of Sales (euros)	Column Labels				
Row Labels	Trimester 1	Trimester 2	Trimester 3	Trimester 4	Grand Total
Badajoz				6790.10	6790.10
Barcelona	83332.29	98499.15	107121.93	100155.40	389108.77
Bilbao	46565.46	56413.82	57250.72	56355.15	216585.15
Cádiz		6178.84			6178.84
Castellón			7878.01		7878.01
Córdoba			7275.12		7275.12
Gijón			14550.22		14550.22
Huelva				9700.14	9700.14
Logroño				9506.14	9506.14
Madrid	86524.12	101691.02	110313.78	103347.26	401876.18
Málaga		9268.25			9268.25
O Cebreiro	3489.05				3489.05
Potes	5743.80				5743.80
Santillana del Mar	4340.22				4340.22
Sevilla	48529.81	57068.60	57697.90	56411.24	219707.55
Teruel		6978.12			6978.12
Valencia	41082.14	49620.94	50250.25	48963.58	189916.91
Grand Total	**319606.89**	**385718.74**	**412337.93**	**391229.01**	**1508892.57**

Table 8.17. Cities with the highest and lowest sales (2018)

Sum of Sales (euros)	Column Labels				
Row Labels	Trimester 1	Trimester 2	Trimester 3	Trimester 4	Grand Total
Badajoz				6790.10	6790.10
Barcelona	83332.29	98499.15	107121.93	100155.40	389108.77
Bilbao	46565.46	56413.82	57250.72	56355.15	216585.15
Cádiz		6178.84			6178.84
Castellón			7878.01		7878.01
Córdoba			7275.12		7275.12
Gijón			14550.22		14550.22
Huelva				9700.14	9700.14
Logroño				9506.14	9506.14
Madrid	86524.12	101691.02	110313.78	103347.26	401876.18
Málaga		9268.25			9268.25
O Cebreiro	3489.05				3489.05
Potes	5743.80				5743.80
Santillana del Mar	4340.22				4340.22
Sevilla	48529.81	57068.60	57697.90	56411.24	219707.55
Teruel		6978.12			6978.12
Valencia	41082.14	49620.94	50250.25	48963.58	189916.91
Grand Total	**319606.89**	**385718.74**	**412337.93**	**391229.01**	**1508892.57**

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Another way to answer this question would be to obtain the percentage of sales compared to the 2018 total for each city. By doing so, we would see that Barcelona and Madrid are the cities where most sales were made in 2018 (around 25% in each case), followed by Seville (around 15% of total sales in 2018). At the bottom, O Cebreiro, Potes and Santillana del Mar have sales that do not account for 1% of the total sales in 2018.

Table 8.18. Percentage of sales compared to the total for each city (2018)

Row Labels	Sum of Sales (euros)
Badajoz	0.45%
Barcelona	25.79%
Bilbao	14.35%
Cádiz	0.41%
Castellón	0.52%
Córdoba	0.48%
Gijón	0.96%
Huelva	0.64%
Logroño	0.63%
Madrid	26.63%
Málaga	0.61%
O Cebreiro	0.23%
Potes	0.38%
Santillana del Mar	0.29%
Sevilla	14.56%
Teruel	0.46%
Valencia	12.59%
Grand Total	**100.00%**

We can make a ranking in two ways, either by ordering the data from highest to lowest (Table 8.19.), or by adding a column showing the classified values (Table 8.20.).

Table 8.19. Percentage of sales made in each city (2018)

Year	2018
Row Labels	**Sum of Sales (euros)**
Madrid	26.63%
Barcelona	25.79%
Sevilla	14.56%
Bilbao	14.35%
Valencia	12.59%
Gijón	0.96%
Huelva	0.64%
Logroño	0.63%
Málaga	0.61%
Castellón	0.52%
Córdoba	0.48%
Teruel	0.46%
Badajoz	0.45%
Cádiz	0.41%
Potes	0.38%
Santillana del Mar	0.29%
O Cebreiro	0.23%
Grand Total	**100.00%**

Table 8.20. Percentage and ranking of sales made in each city (2018)

Year	2018	
Row Labels	**Sum of Sales (euros)**	**Ranking**
Badajoz	0.45%	13
Barcelona	25.79%	2
Bilbao	14.35%	4
Cádiz	0.41%	14
Castellón	0.52%	10
Córdoba	0.48%	11
Gijón	0.96%	6
Huelva	0.64%	7
Logroño	0.63%	8
Madrid	26.63%	1
Málaga	0.61%	9
O Cebreiro	0.23%	17
Potes	0.38%	15
Santillana del Mar	0.29%	16
Sevilla	14.56%	3
Teruel	0.46%	12
Valencia	12.59%	5
Grand Total	**100.00%**	

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Annex I: Table1. Original table with Landfill data

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
31/01/2018	Quarter 1	1	January	Landfill 1	Plastic	600
31/01/2018	Quarter 1	1	January	Landfill 1	Paper and cardboard	300
31/01/2018	Quarter 1	1	January	Landfill 1	Glass	900
31/01/2018	Quarter 1	1	January	Landfill 1	Metal	400
31/01/2018	Quarter 1	1	January	Landfill 1	Textile	300
31/01/2018	Quarter 1	1	January	Landfill 2	Plastic	700
31/01/2018	Quarter 1	1	January	Landfill 2	Paper and cardboard	800
31/01/2018	Quarter 1	1	January	Landfill 2	Glass	500
31/01/2018	Quarter 1	1	January	Landfill 2	Metal	700
31/01/2018	Quarter 1	1	January	Landfill 2	Textile	500
31/01/2018	Quarter 1	1	January	Landfill 3	Plastic	500
31/01/2018	Quarter 1	1	January	Landfill 3	Paper and cardboard	1000
31/01/2018	Quarter 1	1	January	Landfill 3	Glass	700
31/01/2018	Quarter 1	1	January	Landfill 3	Metal	600
31/01/2018	Quarter 1	1	January	Landfill 3	Textile	200
31/01/2018	Quarter 1	1	January	Landfill 4	Plastic	200

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
31/01/2018	Quarter 1	1	January	Landfill 4	Paper and cardboard	1500
31/01/2018	Quarter 1	1	January	Landfill 4	Glass	800
31/01/2018	Quarter 1	1	January	Landfill 4	Metal	900
31/01/2018	Quarter 1	1	January	Landfill 4	Textile	600
31/01/2018	Quarter 1	1	January	Landfill 5	Plastic	1000
31/01/2018	Quarter 1	1	January	Landfill 5	Paper and cardboard	700
31/01/2018	Quarter 1	1	January	Landfill 5	Glass	1300
31/01/2018	Quarter 1	1	January	Landfill 5	Metal	800
31/01/2018	Quarter 1	1	January	Landfill 5	Textile	500
28/02/2018	Quarter 1	2	February	Landfill 1	Plastic	500
28/02/2018	Quarter 1	2	February	Landfill 1	Paper and cardboard	450
28/02/2018	Quarter 1	2	February	Landfill 1	Glass	800
28/02/2018	Quarter 1	2	February	Landfill 1	Metal	500
28/02/2018	Quarter 1	2	February	Landfill 1	Textile	200
28/02/2018	Quarter 1	2	February	Landfill 2	Plastic	600
28/02/2018	Quarter 1	2	February	Landfill 2	Paper and cardboard	800
28/02/2018	Quarter 1	2	February	Landfill 2	Glass	600
28/02/2018	Quarter 1	2	February	Landfill 2	Metal	400
28/02/2018	Quarter 1	2	February	Landfill 2	Textile	300
28/02/2018	Quarter 1	2	February	Landfill 3	Plastic	700
28/02/2018	Quarter 1	2	February	Landfill 3	Paper and cardboard	1100
28/02/2018	Quarter 1	2	February	Landfill 3	Glass	800
28/02/2018	Quarter 1	2	February	Landfill 3	Metal	400

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
28/02/2018	Quarter 1	2	February	Landfill 3	Textile	300
28/02/2018	Quarter 1	2	February	Landfill 4	Plastic	300
28/02/2018	Quarter 1	2	February	Landfill 4	Paper and cardboard	1400
28/02/2018	Quarter 1	2	February	Landfill 4	Glass	900
28/02/2018	Quarter 1	2	February	Landfill 4	Metal	700
28/02/2018	Quarter 1	2	February	Landfill 4	Textile	400
28/02/2018	Quarter 1	2	February	Landfill 5	Plastic	1100
28/02/2018	Quarter 1	2	February	Landfill 5	Paper and cardboard	800
28/02/2018	Quarter 1	2	February	Landfill 5	Glass	1400
28/02/2018	Quarter 1	2	February	Landfill 5	Metal	600
28/02/2018	Quarter 1	2	February	Landfill 5	Textile	400
31/03/2018	Quarter 1	3	March	Landfill 1	Plastic	600
31/03/2018	Quarter 1	3	March	Landfill 1	Paper and cardboard	700
31/03/2018	Quarter 1	3	March	Landfill 1	Glass	700
31/03/2018	Quarter 1	3	March	Landfill 1	Metal	800
31/03/2018	Quarter 1	3	March	Landfill 1	Textile	400
31/03/2018	Quarter 1	3	March	Landfill 2	Plastic	600
31/03/2018	Quarter 1	3	March	Landfill 2	Paper and cardboard	700
31/03/2018	Quarter 1	3	March	Landfill 2	Glass	700
31/03/2018	Quarter 1	3	March	Landfill 2	Metal	800
31/03/2018	Quarter 1	3	March	Landfill 2	Textile	400
31/03/2018	Quarter 1	3	March	Landfill 3	Plastic	900
31/03/2018	Quarter 1	3	March	Landfill 3	Paper and cardboard	1000

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
31/03/2018	Quarter 1	3	March	Landfill 3	Glass	600
31/03/2018	Quarter 1	3	March	Landfill 3	Metal	300
31/03/2018	Quarter 1	3	March	Landfill 3	Textile	400
31/03/2018	Quarter 1	3	March	Landfill 4	Plastic	700
31/03/2018	Quarter 1	3	March	Landfill 4	Paper and cardboard	800
31/03/2018	Quarter 1	3	March	Landfill 4	Glass	300
31/03/2018	Quarter 1	3	March	Landfill 4	Metal	500
31/03/2018	Quarter 1	3	March	Landfill 4	Textile	200
31/03/2018	Quarter 1	3	March	Landfill 5	Plastic	400
31/03/2018	Quarter 1	3	March	Landfill 5	Paper and cardboard	1300
31/03/2018	Quarter 1	3	March	Landfill 5	Glass	1200
31/03/2018	Quarter 1	3	March	Landfill 5	Metal	700
31/03/2018	Quarter 1	3	March	Landfill 5	Textile	800
30/04/2018	Quarter 2	4	April	Landfill 1	Plastic	900
30/04/2018	Quarter 2	4	April	Landfill 1	Paper and cardboard	450
30/04/2018	Quarter 2	4	April	Landfill 1	Glass	1350
30/04/2018	Quarter 2	4	April	Landfill 1	Metal	600
30/04/2018	Quarter 2	4	April	Landfill 1	Textile	450
30/04/2018	Quarter 2	4	April	Landfill 2	Plastic	1050
30/04/2018	Quarter 2	4	April	Landfill 2	Paper and cardboard	1200
30/04/2018	Quarter 2	4	April	Landfill 2	Glass	750
30/04/2018	Quarter 2	4	April	Landfill 2	Metal	1050
30/04/2018	Quarter 2	4	April	Landfill 2	Textile	750
30/04/2018	Quarter 2	4	April	Landfill 3	Plastic	750

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Date	Quarter	Month	Month_name	Landfill	Product	Kg.
30/04/2018	Quarter 2	4	April	Landfill 3	Paper and cardboard	1500
30/04/2018	Quarter 2	4	April	Landfill 3	Glass	1050
30/04/2018	Quarter 2	4	April	Landfill 3	Metal	900
30/04/2018	Quarter 2	4	April	Landfill 3	Textile	300
30/04/2018	Quarter 2	4	April	Landfill 4	Plastic	300
30/04/2018	Quarter 2	4	April	Landfill 4	Paper and cardboard	2250
30/04/2018	Quarter 2	4	April	Landfill 4	Glass	1200
30/04/2018	Quarter 2	4	April	Landfill 4	Metal	1350
30/04/2018	Quarter 2	4	April	Landfill 4	Textile	900
30/04/2018	Quarter 2	4	April	Landfill 5	Plastic	1500
30/04/2018	Quarter 2	4	April	Landfill 5	Paper and cardboard	1050
30/04/2018	Quarter 2	4	April	Landfill 5	Glass	1950
30/04/2018	Quarter 2	4	April	Landfill 5	Metal	1200
30/04/2018	Quarter 2	4	April	Landfill 5	Textile	750
31/05/2018	Quarter 2	5	May	Landfill 1	Plastic	400
31/05/2018	Quarter 2	5	May	Landfill 1	Paper and cardboard	300
31/05/2018	Quarter 2	5	May	Landfill 1	Glass	600
31/05/2018	Quarter 2	5	May	Landfill 1	Metal	400
31/05/2018	Quarter 2	5	May	Landfill 1	Textile	100
31/05/2018	Quarter 2	5	May	Landfill 2	Plastic	500
31/05/2018	Quarter 2	5	May	Landfill 2	Paper and cardboard	650
31/05/2018	Quarter 2	5	May	Landfill 2	Glass	400
31/05/2018	Quarter 2	5	May	Landfill 2	Metal	300

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
31/05/2018	Quarter 2	5	May	Landfill 2	Textile	300
31/05/2018	Quarter 2	5	May	Landfill 3	Plastic	600
31/05/2018	Quarter 2	5	May	Landfill 3	Paper and cardboard	900
31/05/2018	Quarter 2	5	May	Landfill 3	Glass	700
31/05/2018	Quarter 2	5	May	Landfill 3	Metal	300
31/05/2018	Quarter 2	5	May	Landfill 3	Textile	200
31/05/2018	Quarter 2	5	May	Landfill 4	Plastic	200
31/05/2018	Quarter 2	5	May	Landfill 4	Paper and cardboard	1200
31/05/2018	Quarter 2	5	May	Landfill 4	Glass	700
31/05/2018	Quarter 2	5	May	Landfill 4	Metal	600
31/05/2018	Quarter 2	5	May	Landfill 4	Textile	300
31/05/2018	Quarter 2	5	May	Landfill 5	Plastic	900
31/05/2018	Quarter 2	5	May	Landfill 5	Paper and cardboard	700
31/05/2018	Quarter 2	5	May	Landfill 5	Glass	1300
31/05/2018	Quarter 2	5	May	Landfill 5	Metal	500
31/05/2018	Quarter 2	5	May	Landfill 5	Textile	600
30/06/2018	Quarter 2	6	June	Landfill 1	Plastic	300
30/06/2018	Quarter 2	6	June	Landfill 1	Paper and cardboard	350
30/06/2018	Quarter 2	6	June	Landfill 1	Glass	350
30/06/2018	Quarter 2	6	June	Landfill 1	Metal	400
30/06/2018	Quarter 2	6	June	Landfill 1	Textile	200
30/06/2018	Quarter 2	6	June	Landfill 2	Plastic	450
30/06/2018	Quarter 2	6	June	Landfill 2	Paper and cardboard	500

Date	Quarter	Month	Month_name	Landfill	Product	Kg.
30/06/2018	Quarter 2	6	June	Landfill 2	Glass	300
30/06/2018	Quarter 2	6	June	Landfill 2	Metal	150
30/06/2018	Quarter 2	6	June	Landfill 2	Textile	200
30/06/2018	Quarter 2	6	June	Landfill 3	Plastic	350
30/06/2018	Quarter 2	6	June	Landfill 3	Paper and cardboard	400
30/06/2018	Quarter 2	6	June	Landfill 3	Glass	150
30/06/2018	Quarter 2	6	June	Landfill 3	Metal	250
30/06/2018	Quarter 2	6	June	Landfill 3	Textile	100
30/06/2018	Quarter 2	6	June	Landfill 4	Plastic	200
30/06/2018	Quarter 2	6	June	Landfill 4	Paper and cardboard	650
30/06/2018	Quarter 2	6	June	Landfill 4	Glass	600
30/06/2018	Quarter 2	6	June	Landfill 4	Metal	350
30/06/2018	Quarter 2	6	June	Landfill 4	Textile	400
30/06/2018	Quarter 2	6	June	Landfill 5	Plastic	300
30/06/2018	Quarter 2	6	June	Landfill 5	Paper and cardboard	600
30/06/2018	Quarter 2	6	June	Landfill 5	Glass	750
30/06/2018	Quarter 2	6	June	Landfill 5	Metal	450
30/06/2018	Quarter 2	6	June	Landfill 5	Textile	200

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Annex II: Table 1. Original table with Blood Bank data

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	January	Castellón	Castellón	Hospital General	165	182	17
2018	Quarter 1	January	Castellón	Castellón	Hospital Provincial	180	200	20
2018	Quarter 1	January	Castellón	Castellón	Centro 9 de Octubre	90	73	-17
2018	Quarter 1	January	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	110	140	30
2018	Quarter 1	January	Castellón	Vilareal	Hospital La Plana	135	160	25
2018	Quarter 1	January	Valencia	Valencia	Hospital Universitario La Fe	200	227	27

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	January	Valencia	Valencia	Hospital Clínico Universitario	185	157	-28
2018	Quarter 1	January	Valencia	Valencia	Hospital La Malvarrosa	105	149	44
2018	Quarter 1	January	Valencia	Sagunto	Hospital Sagunto	140	144	4
2018	Quarter 1	January	Valencia	Onteniente	Hospital General d'Ontinyent	115	109	-6
2018	Quarter 1	January	Valencia	Alcira	Hospital La Ribera de Alzira	125	145	20
2018	Quarter 1	January	Valencia	Requena	Hospital Requena	70	89	19
2018	Quarter 1	January	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	85	71	-14
2018	Quarter 1	January	Alicante	Alicante	Hospital General de Alicante	145	155	10
2018	Quarter 1	January	Alicante	Alicante	Hospital San Juan de Alicante	120	138	18
2018	Quarter 1	January	Alicante	Denia	Hospital Dénia	165	167	2

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Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	January	Alicante	Elche	Hospital General Universitario de Elche	195	159	-36
2018	Quarter 1	January	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	140	152	12
2018	Quarter 1	January	Alicante	Orihuela	Hospital Vega Baja de Orihuela "Vega Baja"	135	120	-15
2018	Quarter 1	January	Alicante	Torrevieja	Hospital Torrevieja	155	175	20
2018	Quarter 1	February	Castellón	Castellón	Hospital General	154	130	-24
2018	Quarter 1	February	Castellón	Castellón	Hospital Provincial	175	182	7
2018	Quarter 1	February	Castellón	Castellón	Centro 9 de Octubre	85	85	0
2018	Quarter 1	February	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	100	104	4
2018	Quarter 1	February	Castellón	Vilareal	Hospital La Plana	125	97	-28
2018	Quarter 1	February	Valencia	Valencia	Hospital Universitario La Fe	190	204	14

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2018	Quarter 1	February	Valencia	Valencia	Hospital Clínico Universitario	180	162	-18
2018	Quarter 1	February	Valencia	Valencia	Hospital La Malvarrosa	100	110	10
2018	Quarter 1	February	Valencia	Sagunto	Hospital Sagunto	130	133	3
2018	Quarter 1	February	Valencia	Onteniente	Hospital General d'Ontinyent	105	104	-1
2018	Quarter 1	February	Valencia	Alcira	Hospital La Ribera de Alzira	120	130	10
2018	Quarter 1	February	Valencia	Requena	Hospital Requena	60	44	-16
2018	Quarter 1	February	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	80	81	1
2018	Quarter 1	February	Alicante	Alicante	Hospital General de Alicante	140	134	-6
2018	Quarter 1	February	Alicante	Alicante	Hospital San Juan de Alicante	120	120	0
2018	Quarter 1	February	Alicante	Denia	Hospital Dénia	160	158	-2

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	February	Alicante	Elche	Hospital General Universitario de Elche	190	186	-4
2018	Quarter 1	February	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	140	144	4
2018	Quarter 1	February	Alicante	Orihuela	Hospital Vega Baja de Orihuela "Vega Baja"	130	139	9
2018	Quarter 1	February	Alicante	Torrevieja	Hospital Torrevieja	150	122	-28
2018	Quarter 1	March	Castellón	Castellón	Hospital General	160	167	7
2018	Quarter 1	March	Castellón	Castellón	Hospital Provincial	180	175	-5
2018	Quarter 1	March	Castellón	Castellón	Centro 9 de Octubre	90	91	1
2018	Quarter 1	March	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	105	108	3
2018	Quarter 1	March	Castellón	Vilareal	Hospital La Plana	130	94	-36
2018	Quarter 1	March	Valencia	Valencia	Hospital Universitario La Fe	200	215	15

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 1	March	Valencia	Valencia	Hospital Clínico Universitario	185	164	-21
2018	Quarter 1	March	Valencia	Valencia	Hospital La Malvarrosa	110	110	0
2018	Quarter 1	March	Valencia	Sagunto	Hospital Sagunto	140	130	-10
2018	Quarter 1	March	Valencia	Onteniente	Hospital General d'Ontinyent	110	109	-1
2018	Quarter 1	March	Valencia	Alcira	Hospital La Ribera de Alzira	125	98	-27
2018	Quarter 1	March	Valencia	Requena	Hospital Requena	70	74	4
2018	Quarter 1	March	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	90	105	15
2018	Quarter 1	March	Alicante	Alicante	Hospital General de Alicante	150	169	19
2018	Quarter 1	March	Alicante	Alicante	Hospital San Juan de Alicante	125	112	-13
2018	Quarter 1	March	Alicante	Denia	Hospital Dénia	170	184	14

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2018	Quarter 1	March	Alicante	Elche	Hospital General Universitario de Elche	200	202	2
2018	Quarter 1	March	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	145	145	0
2018	Quarter 1	March	Alicante	Orihuela	Hospital Vega Baja de Orihuela “Vega Baja”	140	127	-13
2018	Quarter 1	March	Alicante	Torrevieja	Hospital Torrevieja	160	159	-1
2018	Quarter 2	April	Castellón	Castellón	Hospital General	150	170	20
2018	Quarter 2	April	Castellón	Castellón	Hospital Provincial	185	196	11
2018	Quarter 2	April	Castellón	Castellón	Centro 9 de Octubre	90	65	-25
2018	Quarter 2	April	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	110	115	5
2018	Quarter 2	April	Castellón	Vilareal	Hospital La Plana	130	116	-14
2018	Quarter 2	April	Valencia	Valencia	Hospital Universitario La Fe	205	193	-12

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 2	April	Valencia	Valencia	Hospital Clínico Universitario	190	195	5
2018	Quarter 2	April	Valencia	Valencia	Hospital La Malvarrosa	110	105	-5
2018	Quarter 2	April	Valencia	Sagunto	Hospital Sagunto	145	146	1
2018	Quarter 2	April	Valencia	Onteniente	Hospital General d'Ontinyent	110	111	1
2018	Quarter 2	April	Valencia	Alcira	Hospital La Ribera de Alzira	110	108	-2
2018	Quarter 2	April	Valencia	Requena	Hospital Requena	75	87	12
2018	Quarter 2	April	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	90	90	0
2018	Quarter 2	April	Alicante	Alicante	Hospital General de Alicante	155	161	6
2018	Quarter 2	April	Alicante	Alicante	Hospital San Juan de Alicante	125	110	-15
2018	Quarter 2	April	Alicante	Denia	Hospital Dénia	180	184	4

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 2	April	Alicante	Elche	Hospital General Universitario de Elche	205	200	-5
2018	Quarter 2	April	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	145	144	-1
2018	Quarter 2	April	Alicante	Orihuela	Hospital Vega Baja de Orihuela “Vega Baja”	130	120	-10
2018	Quarter 2	April	Alicante	Torrevieja	Hospital Torrevieja	160	144	-16
2018	Quarter 2	May	Castellón	Castellón	Hospital General	160	165	5
2018	Quarter 2	May	Castellón	Castellón	Hospital Provincial	190	175	-15
2018	Quarter 2	May	Castellón	Castellón	Centro 9 de Octubre	90	94	4
2018	Quarter 2	May	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	110	104	-6
2018	Quarter 2	May	Castellón	Vilareal	Hospital La Plana	130	131	1
2018	Quarter 2	May	Valencia	Valencia	Hospital Universitario La Fe	200	234	34

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2018	Quarter 2	May	Valencia	Valencia	Hospital Clínico Universitario	195	195	0
2018	Quarter 2	May	Valencia	Valencia	Hospital La Malvarrosa	100	97	-3
2018	Quarter 2	May	Valencia	Sagunto	Hospital Sagunto	145	149	4
2018	Quarter 2	May	Valencia	Onteniente	Hospital General d'Ontinyent	120	114	-6
2018	Quarter 2	May	Valencia	Alcira	Hospital La Ribera de Alzira	105	112	7
2018	Quarter 2	May	Valencia	Requena	Hospital Requena	80	81	1
2018	Quarter 2	May	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	90	109	19
2018	Quarter 2	May	Alicante	Alicante	Hospital General de Alicante	155	163	8
2018	Quarter 2	May	Alicante	Alicante	Hospital San Juan de Alicante	115	108	-7
2018	Quarter 2	May	Alicante	Denia	Hospital Dénia	185	194	9

Year	Quarter	Month	Province	City	Hospital	Planned reserve (number of blood donors planned)	Actual reserve (actual number of blood donors)	Difference (Actual reserve-Planned reserve)
2018	Quarter 2	May	Alicante	Elche	Hospital General Universitario de Elche	200	202	2
2018	Quarter 2	May	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	145	152	7
2018	Quarter 2	May	Alicante	Orihuela	Hospital Vega Baja de Orihuela “Vega Baja”	120	118	-2
2018	Quarter 2	May	Alicante	Torrevieja	Hospital Torrevieja	160	169	9
2018	Quarter 2	June	Castellón	Castellón	Hospital General	160	171	11
2018	Quarter 2	June	Castellón	Castellón	Hospital Provincial	180	183	3
2018	Quarter 2	June	Castellón	Castellón	Centro 9 de Octubre	95	95	0
2018	Quarter 2	June	Castellón	Vinaroz	Hospital Comarcal de Vinaròs	100	64	-36
2018	Quarter 2	June	Castellón	Vilareal	Hospital La Plana	130	160	30
2018	Quarter 2	June	Valencia	Valencia	Hospital Universitario La Fe	200	209	9

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2018	Quarter 2	June	Valencia	Valencia	Hospital Clínico Universitario	190	173	-17
2018	Quarter 2	June	Valencia	Valencia	Hospital La Malvarrosa	125	156	31
2018	Quarter 2	June	Valencia	Sagunto	Hospital Sagunto	145	177	32
2018	Quarter 2	June	Valencia	Onteniente	Hospital General d'Ontinyent	120	98	-22
2018	Quarter 2	June	Valencia	Alcira	Hospital La Ribera de Alzira	110	119	9
2018	Quarter 2	June	Valencia	Requena	Hospital Requena	80	56	-24
2018	Quarter 2	June	Valencia	Játiva	Hospital Xàtiva "Lluís Alcanyís"	90	92	2
2018	Quarter 2	June	Alicante	Alicante	Hospital General de Alicante	160	180	20
2018	Quarter 2	June	Alicante	Alicante	Hospital San Juan de Alicante	110	101	-9
2018	Quarter 2	June	Alicante	Denia	Hospital Dénia	195	209	14

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2018	Quarter 2	June	Alicante	San Vicente del Raspeig	Hospital San Vicente del Raspeig	150	150	0
2018	Quarter 2	June	Alicante	Orihuela	Hospital Vega Baja de Orihuela “Vega Baja”	125	117	-8
2018	Quarter 2	June	Alicante	Torrevieja	Hospital Torrevieja	170	186	16

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